The IRON AGE

Vol. 160, No. 9 August 28, 1947

Editorial

o o o

Technical Articles

o o o

Features

o o o

News and Markets

o o o

ONLY A

SPLIT SECOND

SEPARATES THE CHAMPION FROM THE REST OF THE FIELD

Contests of human speed and endurance are often decided by small margins — by split seconds.

And in stainless steel, too, it is the small differences that separate the quality metal from the "also-rans."

But these seemingly small differences are of sufficient importance to warrant careful consideration when the quality of your product and the integrity of your trademark are at stake.

Ingredients used in Sharon Stainless Strip Steel are carefully selected to exacting laboratory standards ... are precisely blended, melted and refined ... are worked by experts, by men who have devoted their lives to producing quality steel for quality products.

SHARON STEEL CORPORATION

Sharon, Pennsylvania

PRODUCTS OF SHARON STEEL CORPORATION AND SUBSIDIARIES: THE NILES ROLLING MILL COMPANY, NILES, OHIO; DETROIT TUBE AND STEEL COMPANY, DETROIT, MICHIGAN; BRAINARD STEEL DIVISION, Warren, Ohio. Hot and Cold Rolled Stainless Strip Steel—Alloy Strip Steel—High Carbon Strip Steel—Galvanite Special Coated Products—Cooperage Hoop—Detroit Seamless Steel Tubing—Seamless Steel Tubing in Alloy and Carbon Grades for Mechanical, Pressure and Aircraft Applications—Electrical Steel Sheets—Hot Rolled Annealed and Deoxidized Sheets—Galvanized Sheets—Enameling Grade Steel—Welded Tubing—Galvanized and Fabricated Steel Strip—Steel Strapping, Tools and Accessories.

DISTRICT SALES OFFICES: Chicago, Ill., Cincinnati, O., Cleveland, O., Dayton, O., Detroit, Mich., Indianapolis, Ind., New York, N. Y., Philadelphia, Pa., Rochester, N. Y., Los Angeles, Calif., San Francisco, Calif., St. Louis, Mo., Montreal, Que., Toronto, Ont.

SHARONSTEEL

The IRON AGE
100 E. 42ND ST., NEW YORK 17, N. Y.

ESTABLISHED 1855

o o o

August 28, 1947

o o o

THOMAS L. KANE
Publisher

o o o

T. W. LIPPERT
Directing Editor

Editorial Staff

News, Markets Editor T. C. CAMPBELL
Technical Editor.....W. A. PHAIR
Machine Tool Editor...H. E. LINSLEY
Metallurgical Editor...E. S. KOPECKI
Ass't News Editor...G. F. SULLIVAN
Art Editor .....F. J. WINTERS
Associate Editor.....J. R. HIGHT
Associate Editor...H. W. VAN CAMP
Associate Editor.....E. L. SCHIMKO
Editorial Assist.....A. D. STOUT, JR.

o o o

Foreign Editors

England (Contrib.)....F. H. HARLEY
49 Wellington St., Strand, London, W. C. 2, England
Canada (Contrib.)...F. SANDERSON
330 Bay St., Toronto, Canada
Paris (Contrib.).....PIERRE BENOIT
59 Rue Manin, Paris XIX, France

Regional News and Technical Editors

T. E. LLOYD
Pittsburgh 22
814 Park Bldg.

D. I. BROWN
Chicago 3
1134 Otis Bldg.

JOHN ANTHONY
Philadelphia 39
Chilton Bldg.

EUGENE J. HARDY
KARL RANNELLS
GEORGE H. BAKER
Washington 4
National Press Bldg.

W. A. LLOYD
Cleveland 14
1016 Guardian Bldg.

W. G. PATTON
Detroit 2
103 Pallister Ave.

OSGOOD MURDOCK
ROBERT T. REINHARDT
1355 Market St., San Francisco 3

R. RAYMOND KAY
Los Angeles 28
2420 Cheremoya Ave.

Editorial Correspondents

ROBERT McINTOSH
Cincinnati

L. C. DEAN
Buffalo

G. FRAZAR
Boston

HUGH SHARP
Milwaukee

JOHN C. McCUNE
Birmingham

ROY EDMONDS
St. Louis

JAMES DOUGLAS
Seattle

Steel on the Block

IN every age and in every political system, there's a certain sameness in the churlish pattern of diverting public wrath. With a great hue and cry of "havoc," the search for scapegoats explodes in all directions, thereby diluting the wrath to a sate of impotent confusion. Today, in this sensitive pre-election year, the politicians are indeed aware of the growing atmosphere of tension and uneasiness as people grow restive with the grip of inflation at their throats.

An economist can detail a score or more factors contributing to the postwar dollar devaluation—no particular one has much popular dramatic appeal. Mr. Eccles, over at Federal Reserve, continually admonishes and cites figures— apparently in a vacuum, for no one pays much attention. Far more diverting will be the Congressional hearings this Fall in some 20 cities to track the high cost of living to its lair. Similarly, the spate of charges by the Federal Trade Commission, accuses the steel industry of illegal price fixing and restraint of trade.

All of a sudden, the steelmakers are aware of several axes poised in midair. The FTC again is arraying its potent artillery to demolish the basing-point marketing structure. Like a tolling bell (somewhat cracked) comes the prophecy of a Western Reserve professor that steel mills must soon scatter to coastal points as the Mesabi ore range is scraped clean. There's a rising barrage of criticism for failure to expand steel capacity (led, in part, by Mr. Kaiser, who doesn't practice what he preaches). And, popular opinion is slowly being convinced that the industry's main preoccupations are the mulcting of customers and the steady shoveling of profits into vaults already bulging at the joints.

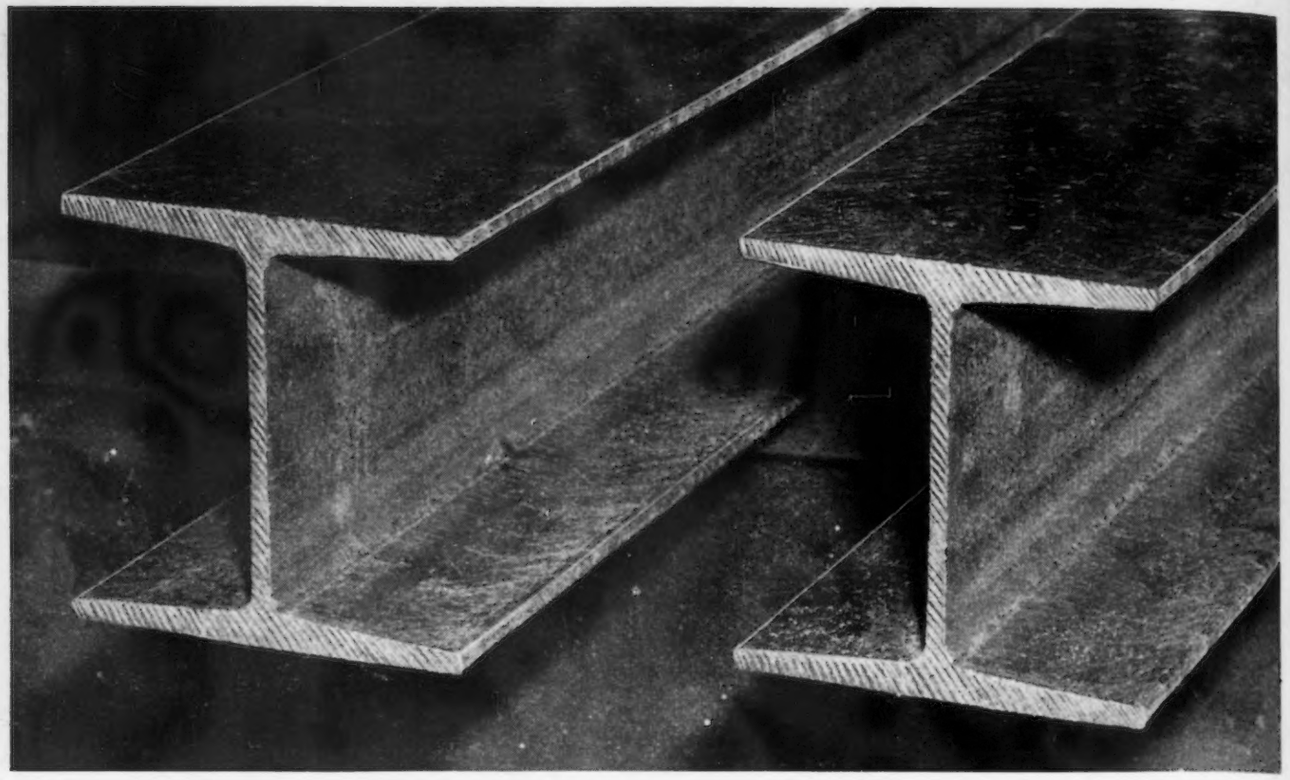
But a still greater threat rears its head. Let this present pace of activity continue—capacity production, healthy profits, and such—and some of the larger integrated producers may well face virtual bankruptcy. Such a statement could give rise to cynical guffaws of disbelief —even within the industry there's a widespread feeling of solvency and the exhilaration of well-being. But, here and there, a troubled awareness is increasing that there's something fundamentally wrong with the balance sheet. While the figures show up big and black, the instinctive feeling is that they just aren't adding up right. In short, the industry is itself caught inextricably in the inflationary spiral, and hardly yet is conscious of the trap.

The big integrated units are making steel (and profits) on enormously expensive equipment being depreciated tax-wise on the basis of prewar costs. How is this equipment to be replaced? A 70-oven 390,000-ton coke oven battery cost $2,500,000 in 1943; today its actual cost is $6,000,000. A 80-in. 10-stand strip mill cost $5,700,000 in 1937; today its actual cost is $10,500,000. In 1937 the field labor cost on a 20x80-ft. reheating furnace was $24,500; an exact duplicate today costs $53,327. And so on, some better, some worse, for all producing equipment.

Rather than large steel producers splitting juicy profit melons, the near future may see some of them entering the money markets for funds to complete rehabilitation programs already committed. As for new capacity, most producers are losing their nerve. The U. S. Steel Corp., temporarily, has shelved plans for huge new Atlantic Coast and Gulf plants, aggregating $1½ billion.

A fully integrated mill built today would require a selling price for finished steel of well over $100 per ton, against today's price of $64. It will ultimately come to this, or a higher tax-exempt depreciation rate, or lower wage rates, or a government subsidy, or (like the railroads) neat little brass equipment-trust plates riveted to pieces of major equipment. The FTC may belabor and the cartoonist caricature, but the figures are there, and simple multiplication and division will do the rest.

T. W. Lippert



IDENTICAL ... But one is TWICE AS STRONG

One of the H-beams shown above is ordinary carbon steel. The other is Inland Hi-Steel—a low alloy, high strength, structural steel. Hi-Steel has nearly twice the working stress of ordinary structural steel, 50% greater ability to stand up under impact loads, and a marked resistance to continued vibration. In addition, it has about five times the atmospheric corrosion resistance and is far more resistant to abrasion.

On mobile equipment, Hi-Steel makes it possible to eliminate considerable dead weight and increase payload, without sacrificing strength.

Unfortunately the present demand for Hi-Steel continues to exceed the supply. To make larger tonnages available to you, other steel companies have been licensed to make this superior product. Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill. Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

HI-STEEL meets the requirements of SAE Specification 950

Advantages of INLAND HI-STEEL

- HIGHER STRENGTH
- GREATER CORROSION RESISTANCE
- MORE RESISTANT TO ABRASION
- EASY TO WORK
- LOW IN COST

Write for Booklet

INLAND HI-STEEL

INLAND STEEL

INLAND PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • PILING • FLOOR PLATE • RAILS • TRACK ACCESSORIES

► A new type reversing cold reduction strip mill which has been in the development and trial operating stage for about a year has successfully rolled carbon and stainless steel strip down to 0.008 in. with negligible camber. It is said to be able to roll stainless strip from 0.015 to 0.020-in. thick at the rate of 1500 tons a month per foot of mill width; for comparable carbon steel the figure is 2200 tons a month.

Four rolls back up the upper work roll in a modified "Y" cluster arrangement, and one roll backs up the lower work roll. The 20-in. mill now running is making strip averaging 13-in. wide and is powered by a 600-hp motor with 200-hp coiling reel motors.

► Firing a cartridge slightly larger than .45 caliber, a steel punch capable of shooting holes through ¾-in. steel is now being used by railroad maintenance crews. The explosive force drives the punch through steel rails, leaving a clean round hole that eliminates the time-consuming job of drilling holes in rails when laying tracks.

► Higher wage rates have had a more important effect on specialty steel mills making products such as tool and stainless steels because of their lower order tonnages and diversified production. Many such mills have found it necessary to extend plant mechanization and streamline layouts to maintain operating efficiency.

► A supplier of anti-friction bearings estimates that 80 pct of the people building new homes put in garage or basement workshops. Jig saws, wood turning lathes and motor-driven bench saws are the most popular tools.

► Output of 11,484 television receivers in June set a new record. Total for the first 6 months of this year was 46,389, compared with 6476 for the entire year 1946.

► A number of firms are taking advantage of the Lanham Act to register trade marks which had formerly not been registerable under the old laws because the trade marks were originally only descriptive or geographical.

► A cemented carbide rotor notching die with a steel punch--in a GE Schenectady plant--gives a higher number of slots per grind than the total number of slots formerly obtained during the entire life of a steel die and punch. The combination of a carbide die and a steel punch proved better on this job than carbide punch and carbide die.

► During the period Dec. 1, 1945 to June 30, 1947 the number of cases held secret by the Patent Office in the interest of national security rose from 763 to 1217--indicating a sharp increase in the number of patents held secret since VJ-Day. At the end of June 1947 there were still 539 cases in the secret file.

► Muzak, supplier of piped-in recordings for restaurants, etc., also wires different programs to industrial plants. There are two: one for light industry and another, somewhat louder, for heavy industry.

► Negotiations for shipment of Swedish iron ore to Germany are reported to be going well. German utilization of the higher grade Swedish ore would permit greater steel output with existing coke supplies.

► A trade agreement between France and Italy specifies that the latter is to deliver a steel rolling mill to France. France will pay off 50 pct of it by exporting 80,000 tons of scrap, $235,000 worth of pig iron and $140,000 worth of alloy steels.

Italy will also export to France $675,000 worth of machine tools, $85,000 worth of roller bearings and $340,000 worth of injection pumps for diesel engines.

► Next Oct. 1 all British railway charges will go up to a level 55 pct above the 1939 level. This latest jump--the fourth since May 1940--will amount to 16¼ pct on passenger fares and 24 pct on freight.

► Although members of Walter P. Reuther's autoworkers union have been abandoning their jobs in droves as a result of hot weather he apparently feels that the steelworkers ought to work harder in the hot weather so as to push the steel industry operating rate closer to capacity.

New Press Tooling Speeds

Designed specifically to meet tremendous production demands, a new Waterbury-Farrel press has recently been installed in the Yale & Towne plant for the progressive manufacture of escutcheon plates. Equipped with two crankshafts operating seven plungers and a toggle unit for coining, the machine and its progressive dies are described herein. Also described is an ingenious die for assembling brass scalps to glass doorknobs.

o o o

By W. J. DONAGHEY

Supt., Press and Rod Shops, Stamford Div., Yale & Towne Mfg. Co., Stamford, Conn.

o o o

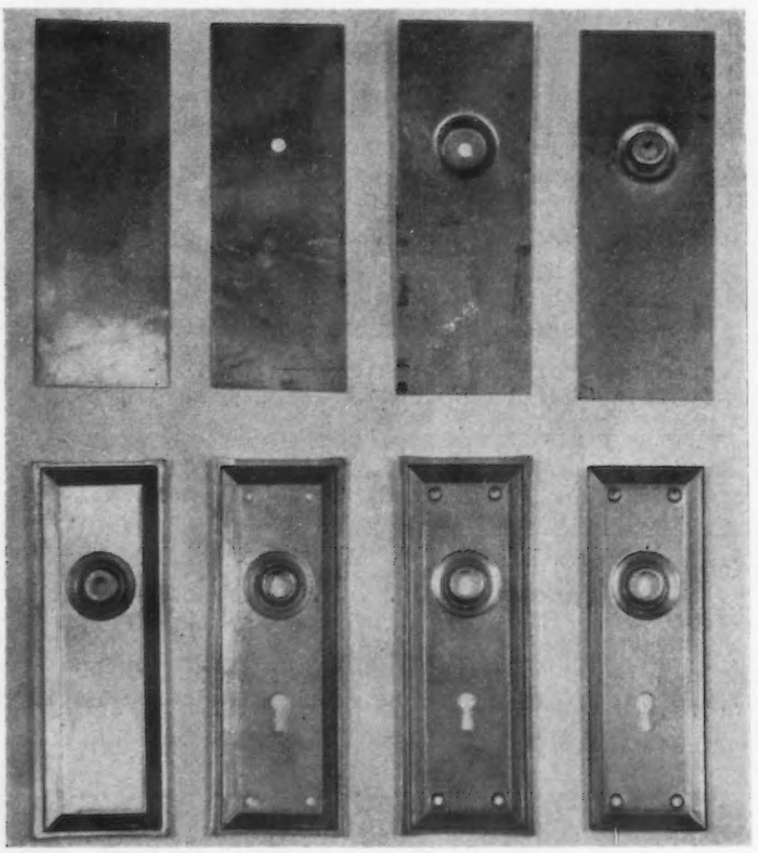


FIG. 1—Escutcheon plates as they appear after each of the progressive die operations from cut off through drawing, coining, piercing, countersinking and final trim operations.

ALMOST unprecedented demands for door hardware have led Yale & Towne Mfg. Co., Stamford div., to retool for many items included in their current lines. Among the more interesting of these setups is that in a new Waterbury-Farrel press equipped with an eight-station progressive die made in the same number of separate sections for turning out completely formed escutcheon plates.

The press itself is unusual in that it has two separate crankshafts for operating seven plungers that perform the lighter operations, and between these a toggle operated unit which does the major forming. In the same stroke, the forming die performs coining and swaging operations. The latter result in sharp-edged details considered important from an appearance standpoint.

As the die is made in sections, these, together with parts of the punches, are readily changed to produce escutcheons of different contours. At the same time, parts of the basic die are retained to pierce and to form the boss around the hole for the knob spindle and to pierce the key hole, as these details are the same for all escutcheons in this line.

Wedge adjustment is provided for punches, and the press is equipped with a transfer frame, the side bars of which are given a combined reciprocating longitudinal motion and transverse motion to actuate the fingers

that shift the work from station to station. With this setup, the strip stock is fed across the blanking station and is sheared off. As no flash strip is produced, there is, of course, no dependence upon it to shift or index the work, as for many progressive die setups.

The work retains its generally oblong shape until flash is finally trimmed off at the last station. For the escutcheon shown in successive stages in fig. 1, the completed piece is oblong and has a beveled edge, but this is not true of other designs of escutcheons which are produced from other die components applied in the same general type of setup using some of the same die and punch parts in the same press.

In the die for an oblong escutcheon, the stock is cut off at station one and a hole is pierced at the second station. Then, at the third station, a knob boss is drawn, with the pierced hole at its center. At the fourth station, the boss is redrawn, the metal previously drawn down being forced upward by a punch from below.

After shifting to the fifth station, which is under the toggle-operated punch, the piece is drawn to form the beveled edges. In so doing, however, the punch also performs a swaging or coining action, the effect of which is to produce or set sharp and well-defined edges at the inner sides of the bevel, at the diagonal bends at each corner and around the knob boss.

This is accomplished by providing on the punch, along the lines that must appear as sharp edges, lands about 1/16 in. wide and 0.010 in. high. These lands coin the metal between their face and the die and flow it into the mating sharp-edged die recesses. Without these lands and the resultant coining, the edges would have a sizable radius and would lack the sharp definition desired. Such coining, over a considerable area, requires heavy pressure and accounts for providing a toggle action at the fifth station.

When the formed piece is shifted to the sixth station, the hole at the center of the boss is pierced to finished size and at the same time the keyhole and four screw holes are pierced. Then the piece is shifted to the seventh station where the screw holes are countersunk. In the final station, the flash is clipped from the contour and the completely formed plate is ejected.

In fig. 2, the press is shown from the feed side with stock being fed through straightening rolls at left.

Among the other unusual press tooling jobs in this plant is that for assembling brass or

[1] *The special equipment for drawing the scalps was described in* THE IRON AGE, *July 24, 1947, p. 56.—Ed.*

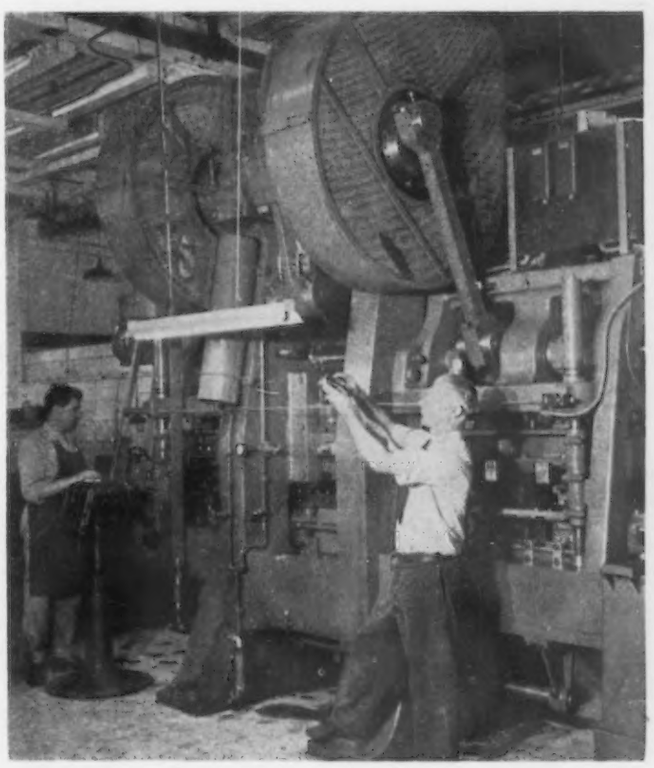


FIG. 2—Press and die for producing the escutcheon. At left is a set of straightening rolls through which strip stock is fed into the cut-off station.

brass plated steel scalps to glass doorknobs, as shown in figs. 3 and 4.

The shank of the knob is composed of the drawn scalp[1], a small threaded cast iron insert that forms a hub for spindle attachment and a small flanged stamping. On the face of the flange there are formed serrations that mate with corresponding serrations in a recess of the glass knob and prevent any tendency for the knob to turn in reference to the shank assembly after the scalp is assembled around a circumferential bead molded as a part of the glass knob.

Assembly is done in a Dennison hydraulic press equipped with the die shown in fig. 4. Operation is as follows: The glass knob is first set on a spring cushioned plunger having a head recessed to fit the knob end contour. Next, the operator drops into a scalp a cast iron insert and the serrated stamping. A few drops of waterglass are run onto the flange where it mates against the knob recess and then the scalp, with the parts inside it, is inverted over the end of the knob.

At the center of the punch half of the die is a recessed holder or punch which centers and fits the outside of the scalp and presses the latter firmly against the glass knob bead. As the press closes slowly, rollers on a pair of jaws supported on the die ride up the inclined mating slots of two cams, and a pair of jaws is closed to form an annular curling die around the knob bead. Further motion of the punch causes the split die to curl the lip of the scalp inward and form it permanently around the knob bead with which a firm contact is established. The cam blocks are each provided with a screw adjustment which makes it easy to set the jaws correctly. The press is so adjusted as to make the scalp fit the knob bead tightly and yet not break the glass.

As this curling takes place, the flange inside the scalp is pressed tightly and held securely against the knob recess, and the scalp is so tightly anchored to the knob that the knob cannot turn in the scalp which, of course, is one objective in making the assembly.

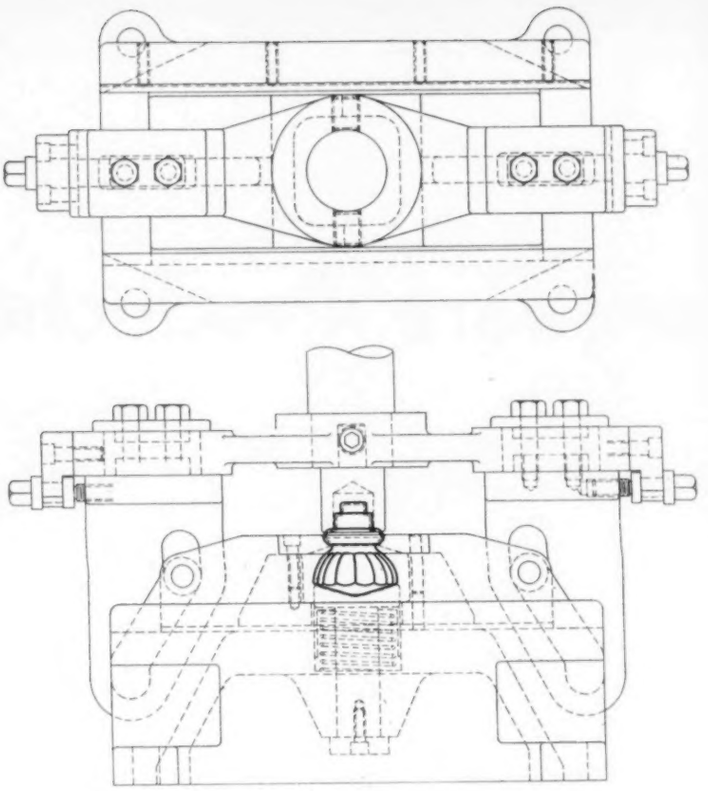


FIG. 3—Split, cam-closed curling die employed to form a drawn brass scalp around the bead of a glass knob in a hydraulic press.

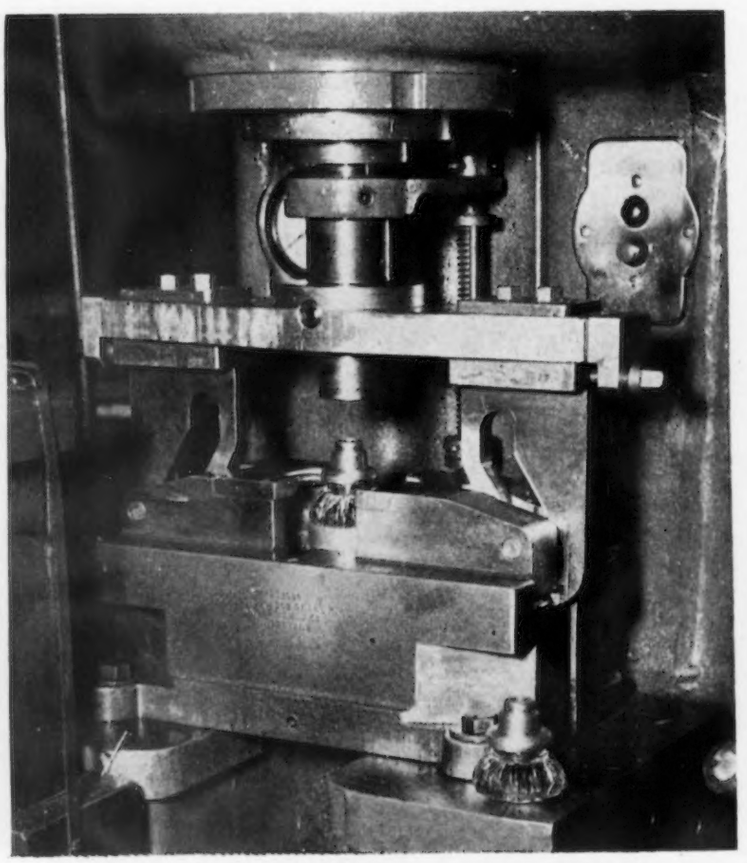


FIG. 4—Dennison hydraulic press setup with cam-operated die employed for closing a drawn brass scalp around a glass knob bead. A finished knob is shown below the die.

Correct Technique Necessary For Stainless Welding

Increasing use of stainless steel in all types of industries makes it imperative for welders to have a knowledge of the basic characteristics of the four principal types of stainless, and to employ the correct technique of welding to obtain maximum corrosion resistance and structural strength. Information is given herein on the practices to be followed, the electrodes to be used, and the preheat and postheat temperatures for each main type.

By L. K. STRINGHAM

Engineer in Charge of Welding Application, Lincoln Electric Co., Cleveland

THE ready acceptance of stainless steel by the chemical industry and others requiring material with unusual corrosion and heat resisting characteristics is evidence of the alloy's ability to meet exacting construction requirements. It can be rolled, drawn, formed or worked into almost any desired shape or apparatus and it has the advantage of an inherent defense against the attacks of the elements.

Experience is now showing that by applying the arcwelding process to stainless steel construction the ultimate in design and performance can be achieved.

Naturally, a comprehension of the basic characteristics of stainless steel and of the correct welding techniques is necessary to guarantee efficient results. The purpose of this discussion, then, is to examine the capabilities of stainless steel and to suggest welding approaches for the situations most commonly encountered.

Speaking generally, stainless steels may be divided into four principal classifications, each of which requires individual consideration They are (1) the hardenable ferritic type, (2) the partially hardenable ferritic type, (3) the nonhardenable ferritic type and (4) the austenitic type.

Often referred to as the martensitic type, hardenable ferritic steels are straight chromium steels which range from 3 to 14 pct Cr and includes AISI type 502 (4 to 6 pct Cr) and AISI type 403 (12 to 14 pct Cr). Because this class of steel is so hardenable, both preheating and postheating are desired.

A preheating temperature of 400°F should be normally maintained throughout the welding operation. It is a good policy to use an electrode of the same general analysis as the plate being welded. There are exceptions, however, which will be encountered in those situations where preheating is not practical. This is particularly true in repair work. In these cases, welding without preheating, if the electrode is of the same analysis as the hardenable straight chrome steel, will result in a hard brittle weld that will probably contain cracks. This can be overcome by using a 25 pct Cr, 20 pct Ni electrode which will produce a soft and ductile weld metal.

If the steel is to be annealed after the welding, it should be put directly into the furnace without allowing it to cool. The weld and the parent metal in the heat affected zone are so hard and so brittle that cracks are very likely to occur if the part is permitted to cool off to room temperature. The annealing temperature should be kept somewhere between 1550° and 1600°F, and during the subsequent cooling process, it is important that the cooling rate be restricted to

not more than 50° an hr until a temperature of 1200° to 1300° is reached, after which it may be air cooled.

Although full annealing is generally recommended, it is sometimes impractical, and it is necessary to stress relieve the welded part. However, before attempting to do any stress relieving it is important to be certain that the part has already become martensitic. Otherwise it will become so after the stress relieving, thus practically nullifying the beneficial effects of the whole stress-relieving process.

An easy way of determining whether the weld has transformed to martensite is to check it with a magnet, and if the weld is found to be magnetic, then the transformation has taken place. If it is not magnetic, the transformation to martensite has not yet occurred and the weld should be permitted to cool until it does, before proceeding with the stress relieving. The stress-relieving temperature is from 1300° to 1400° and approximately 4 hr at this temperature is required.

Partially Hardenable Ferritic Type

This type embraces straight chromium steels with a proper balance of carbon and possibly other low percentage alloys which range from 15 to 18 pct Cr and includes AISI type 431 (15 to 17 pct Cr, 1.25 to 2.50 pct Ni and probably would be ordered as a partially hardenable chromium steel rather than by type number). This alloy is better suited to welding than those of a slightly lower or higher chromium content. The fact that this is only partially hardenable results in a weld and a heat affected zone less hard and brittle than the fully hardenable type. At the same time, the fact that it is partially hardenable results in some grain refinement which prevents the growth of large brittle grains which are present in nonhardenable straight chromium steels.

In welding, a preheat of 200°F is recommended. Because of the brittle joint, annealing at a temperature of 1450°F is suggested where working stresses or impact are likely to be high. To insure maximum softness after annealing, the part should be furnace cooled to 1100°F and then air cooled.

Nonhardenable Ferritic

Chromium steels above 18 pct Cr are normally entirely ferritic and are not hardenable by heat treatment. Elevated temperatures, such as those reached during welding, will produce extreme grain growth which results in a very brittle joint, a deficiency which cannot be corrected by annealing or stress relieving. Therefore, if the joint is going to be subjected to considerable bending or impact loading, welding will not be found practical.

If such severe usage is not contemplated, however, the joint may be welded to satisfaction. A 25 pct Cr, 20 pct Ni electrode should be used because the soft and ductile weld it produces will perform better than the weld created by an electrode of the same analysis as the plate.

Austenitic Type Stainless

Conventional heat treatment will not harden stainless of the austenitic type. Practically no difficulty is encountered in welding austenitic steel since there is no hardening of the weld metal or the heat affected zone upon cooling after the welding.

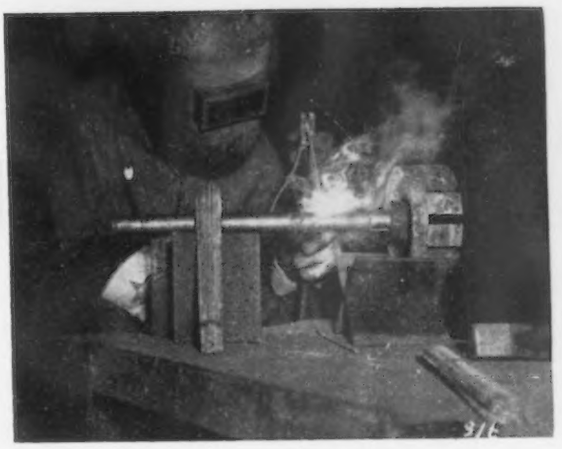
One difficulty with austenitic, especially with the 18 pct Cr, 8 pct Ni type, is its instability

TABLE I

A Guide for Selection of Electrodes for Welding Stainless

Type of Stainless To Be Welded		Recommended Type of Electrode for Welding	Preheat and Interpass Temperature	Postheat
AISI Type Number	Commonly Referred To As			
302, 304, 308	18-8 or 19-9	18-8 or 19-9	None Necessary	Normally None
309	25-12	25-12	None	None
310	25-20	25-20	None	None
316	18-8 SMo or 18-12 SMo	18-12 SMo	None	None
321	18-8 Titanium Stabilized	18-8 Cb	None	None
347	18-8 Columbium Stabilized			
403	11½-13 pct Straight chrome	*12 pct Straight chrome	200°F or higher advisable	Anneal at 1550 to 1600°F. Cool not faster than 50°/HR until 1200°F is reached. May be air cooled below 1200°F OR Stress Relieve at 1300 to 1400°F.
502	4-6 pct Straight chrome	4-6 pct Straight chrome	400°F or higher	
431	15-17 pct Straight chrome	15-17 pct Straight chrome	200°F or higher	Anneal at 1450°F. Slow cool to 1100°F.
446	23-27 pct Straight chrome	23-27 pct Straight chrome	200°F	

* 25-20 (Lincoln Stainweld D) recommended when it is not imperative to match analysis of weld metal and parent metal. If preheat is impossible, 25-20 should be used.



Building up a worn stainless steel shaft for a salt water resisting bronze impeller by electric arcwelding.

o o o

upon heating. When 18-8 stainless steel is heated to a temperature of 800° to 1200°F, the chromium unites with the carbon and forms chromium carbide at the grain boundaries. As such, this has no serious effect on the properties of the steel, but a steel in which chromium carbide precipitation has taken place is more susceptible to corrosion. The atmosphere or corrosive liquids attack the grain boundaries and in time will produce a weak and brittle structure, a phenomenon known as intergranular corrosion.

Even though the parts to be welded will not be subjected to temperatures high enough to produce carbide precipitation in service, the heat affected zone and the weld metal will be heated above the carbide precipitation temperature (800 to 1200°F) and cooled through it during the welding operation. If the cooling rate is slow enough, carbide precipitation may take place in that temperature range.

Removing Precipitated Carbide

Precipitated carbide may be removed from the grain boundaries by heating the steel to approximately 1900° F and then quenching from that temperature. However, if the steel is reheated to 800° to 1200° F, the chromium carbide will form again.

If AISI types 304 and 308 stainless steels are single-pass welded, the time that the steel is within the 800° to 1200° temperature range is so short that very little carbide precipitation takes place. Therefore, intergranular corrosion is very unlikely to occur in welded stainless steel of these types provided the welds are single pass and provided the finished product is not operated near the 800° to 1200° temperature range.

If the steel is thick enough to require multiple-pass welds or if the finished product is to operate at or near the temperature range of 800° to 1200°, carbide precipitation is likely to occur even with types 304 and 308 stainless steels. As a result, intergranular corrosion is likely to result if the product is subject to a corroding agent. Carbide precipitation can be prevented during multiple pass welding and sustained operating temperatures within the range of 800° to 1200° by stabilizing the stainless steel with the addition of either columbium or titanium, since both of these agents have a greater affinity for carbon than for chromium.

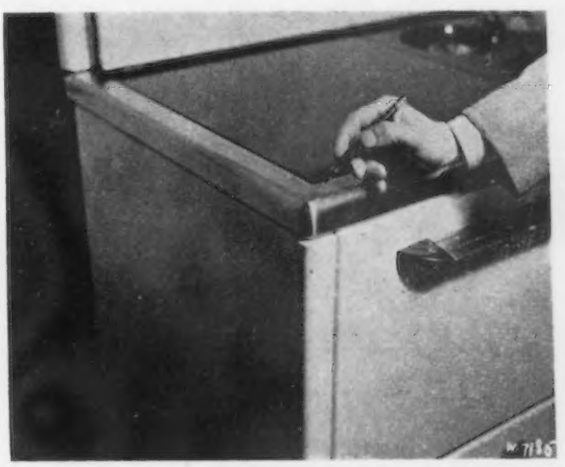
Of the 18-8 type stainless steels, AISI types 321 and 347 are considered stabilized steels. Type 321 is stabilized with the addition of titanium, the minimum amount equal to five times the carbon. Type 347 is stabilized with the addition of columbium, the minimum amount equal to ten times the carbon content.

Intergranular Corrosion

Alloys with higher than 18 pct Cr are less susceptible to intergranular corrosion. As a result, the higher chromium chrome-nickel steels do not normally contain either columbium or titanium. Unstabilized stainless steels are normally welded with an unstabilized electrode such as Stainweld A-7. Stabilized 18-8 is normally welded with stabilized electrodes as Stainweld A-5cb or Stainweld A-7cb.

Whenever welding stainless steel to which molybdenum has been added as protection against acid, an electrode should be used which will deposit a weld metal of comparable analysis.

In general, it may be said that the arcwelding process may be applied to stainless steel construction without a lot of complicated preliminaries. However, there are cautions to be observed as the foregoing discussion has pointed out, and experience is proving that attention to these cautions will help to develop stainless steel construction to its ultimate.



o o o

Arcwelded corner joint on the stainless steel edge of a domestic gas range.

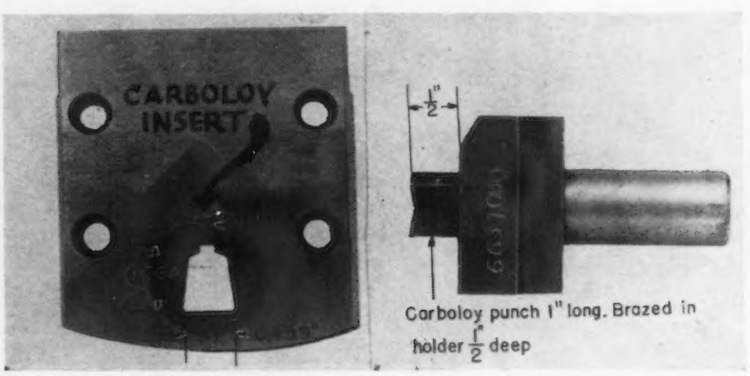
Cemented Carbide Used for High

The selective application of cemented carbide in high production dies and punches to areas subjected to high wear forces offers a means of greatly increasing die runs and boosting the number of parts produced per grind. This report cites a series of such successful applications made by the manufacturing divisions of the Lynn River Works of General Electric Co., Schenectady.

As a result of investigations carried on during the past several years, engineers in charge of various press, tool, and die operations at the Lynn River Works of the General Electric Co. have succeeded in effectively applying cemented carbide to many high-production dies and punches. In practically all cases, results have been highly satisfactory.

Typical of these applications is the use of Carboloy in stator and rotor notching dies and punches, drawing dies, and parts of notching press fixtures subject to rapid wear. Although some applications are still in the experimental stage, the fact has become established that much longer die runs are obtained with the proper adjustment of presses, correct alignment of dies and punches, and by training operators and die setters in the proper handling of these tools. In addition to the greatly increased number of punchings per grind, machine utilization is increased because of the reduced number of setups required. One man is assigned to the duty of grinding and lapping these dies to the proper dimensions for producing a product within ± 0.002 tolerance.

The Carboloy stator notching die and punch shown in fig. 1 was used for two setups to date with an average of 1,211,011 slots per grind, as compared to an all-steel die total of 80,000. The Carboloy die insert has a diameter of 1 1/16 in. and is ½ in. thick. The Carboloy punch, which is 1 in. long and brazed ½ in. deep in the holder, has an estimated number of 26 grinds per life and the die has the same number, compared with 75 each for the steel type. Total number of slots for the life of the Carboloy die was 31,486,000 as compared with 6,000,000 for the steel die. A similar type of Carboloy stator notching die and punch, the second made for this particular case slot, gave an average of 1,579,447 slots per grind as compared with 80,000 for an all-steel die. Fourteen grinds were required for both punch and die during the life of the Carboloy unit, while 75 each were required for the steel type. A total life slot record of 22,112,270 was credited to the



o o o

FIG. 1—Cemented carbide die and punch for stator notching which gave an average of 1,211,011 slots per grind. Both parts have an estimated 26 grinds per life.

o o o

Production Dies and Punches

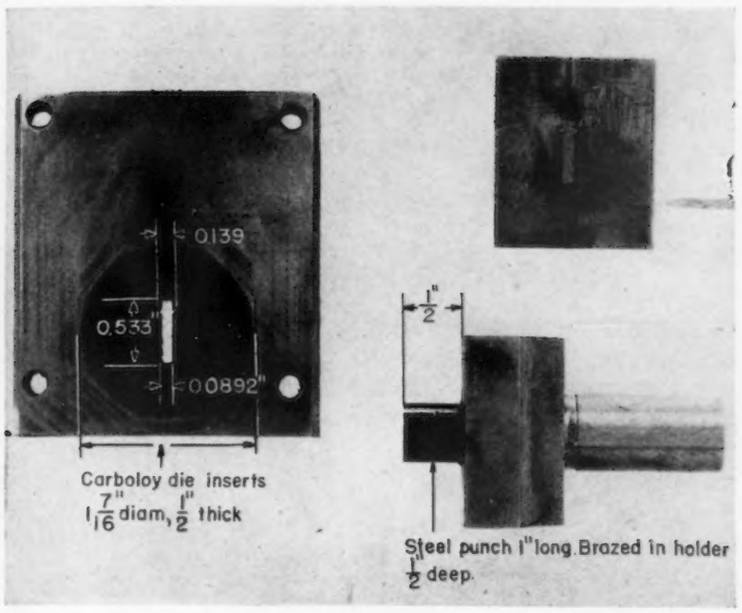


FIG. 2—Using Carboloy for this rotor notching die and a steel punch, one die has produced as high as 4,076,620 slots in one setup with no indication of wear.

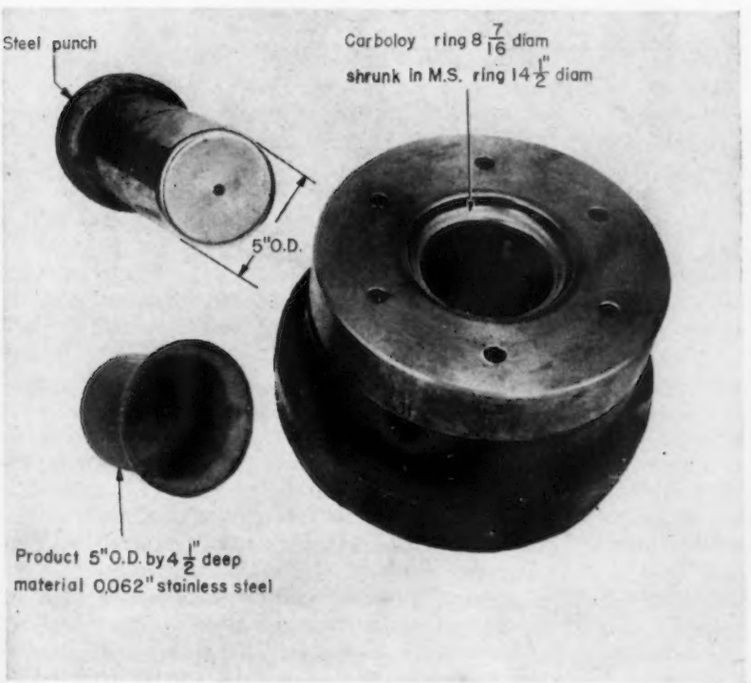


FIG. 3—This Carboloy draw die and steel punch was purchased more than 4 years ago and has since produced more than 20,000 parts with no indication of wear.

Carboloy unit, while only 6,000,000 were made during the life of the steel die.

A cemented carbide rotor notching die with steel punch is shown in fig. 2. The slot for which this punching equipment was developed represents one of the most difficult types yet attempted. Originally, Carboloy punches were tried with Carboloy dies with little success. By using a Carboloy die with the steel punch, however, one die has produced as high as 4,076,620 slots in one setup with one die grind and 25 punch grinds. The Carboloy die insert in fig. 2 is ½ in. thick with a 1 7/16 in. diam. The steel punch is 1 in. long and brazed in the holder ½ in. deep. Subsequently the die has produced 13,241,385 slots in five setups with five grinds, during which operation three punches were used with 82 grinds. The average number of slots per grind was 2,648,236. Up to the time Carboloy was applied to this type of die, approximately 2,400,000 slots were obtained during the life of one standard steel die and punch. It was observed that the average slots per grind obtained by the use of Carboloy die and steel punch was greater than the number of slots obtained during the entire life of a steel die and punch.

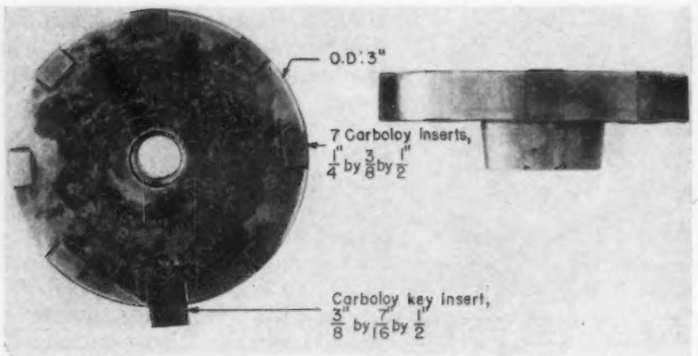
The Carboloy draw die steel punch shown in fig. 3 was purchased more than 4 years ago, and since then has produced more than 20,000 stainless steel pieces 0.062-in. thick and 4½ in. deep, with an OD of 5 in. To date there are no indications of wear. A Carboloy ring of 8 7/16 in. diam is shrunk in a 14½-in. diam mild steel ring. The steel punch has a 5-in. OD. Previous to the installation of this die difficulty was experienced in making a satisfactory product because of excessive die wear due to the toughness of the material

being worked. After the Carboloy die was installed, a more satisfactory product was produced in a shorter time at less cost and machine utilization was increased.

Notching press locating plugs of the type illustrated in fig. 4 are used during the notching operation on rotor punchings. This particular plug has a 3-in. OD with seven Carboloy inserts ¼ x 7/16 x ½ in. and a Carboloy key insert ⅜ x 7/16 x ½ in. Each rotor press is equipped with a locating plug to hold the punching in position while it is being notched. Wear problems were overcome by annealing the steel plugs and inserting Carboloy inserts and keys. Savings realized by this practice were approximately $364.00 annually for each high production plug and again, machine utilization was increased. A new type of rotor locating plug used on an automatic-feed notching press is shown in fig. 5. The Carboloy ring is ½ thick with a 1 13/16-in. OD and a 1 15/16-in. ID. This type of plug is used when no keyway is needed for line-up of punchings in assembly. Punchings are automatically fed into the die and an air-operated hold-down forces the blank over the locating plug. Friction provided by serrations on the plug enables the punching to be indexed to notching positions.

FIG. 5—This type of rotor locating plug, used on an automatic feed notching press, employs a Carboloy ring. This plug is used when no keyway is needed for the line-up of punchings in assembly.

FIG. 4—Wear problems on notching press locating plugs used during the notching operation on rotor punchings were overcome by annealing the steel plugs and using Carboloy inserts and keys.



Plastic Film Locks Threaded Parts

PLASTICOL, a synthetic adhesive plastic film developed during the war in Sweden to lock threaded parts, is claimed to have great adhesive power, toughness and elasticity, becoming neither hard nor brittle as it ages. The film is derived from mixed polymerisates of polyvinal compounds and is applied to prevent loosening due to variations in temperature, vibration and stress. Every thread of a screw coated with this film is self-locking and screw connections may be reset without destroying its holding power, according to P. Pieper & Co. Plasticol is also claimed to act as a rust preventative and may be obtained in colors.

The material is applied with a brush to obtain a film of 0.002 to 0.004 in. thickness and is allowed to dry slightly before threads are engaged. The film fills up spaces between the thread so that a surface contact of 100 pct is said to be obtained. When a nut is tightened on a bolt the excess coating is driven out and deposits in the form of an annular bead on both faces of the nut. Volatile solvents in the coating evaporate to form a rubber-like mass which prevents solvents on the screw threads from escaping and the internal mass maintains its elasticity. Cost of application is said to be low as only a small amount is needed. The securing effect produced is independent of the tension existing in the bolt or pressure exerted between threads. Face of screw threads, nuts, washers and parts pressed against each other through screw connections are covered to assure 100 pct contact surface. Applied between spring leaves, the film acts as a dampner and is claimed to prevent corrosion and the need for lubrication. This plastic is also said to provide 100 pct surface contact in sealing flange connections.

Practical suggestions for improving the atmosphere of foundries, large and small, are given in this, the second part of a comprehensive survey of the foundry dust and fume control problem. Among the subjects covered herein are engineering problems, measurement of air contamination, salvage of existing equipment, air sources, outdoor air pollution, the smoke nuisance and costs.

The Foundry Atmosphere

By WILLIAM N. WITHERIDGE

Ventilation Consultant, General Motors Corp., Detroit

PERHAPS the best way to improve the atmosphere of some foundries is to rebuild them. This may sound a little drastic, but it is by no means unprecedented or unrealistic. Usually, such a move depends on the desire of management to increase production five or ten times, because the mechanization of a foundry generally precedes the modernization of its ventilating and dust collecting plant.

In some fields of equipment purchasing, it is possible to spend three to five times as much as the materials and services are worth. But in the realm of air handling equipment there seems to be a very grave uncertainty as to the consequence of one's investment in materials and engineering services. This is a harsh statement, but most experienced industrial ventilating engineers deplore the widespread occurrence of bad examples of their art. They are equally chagrined at the costly mistakes made occasionally by the best designers and artisans in the profession.

In the first part of this two-part article, published in the issue of August 21, 1947, the author discussed some of the basic considerations of air and dust control, sources of atmosphere contaminants, and the degree of health hazard presented by such sources.—Ed.

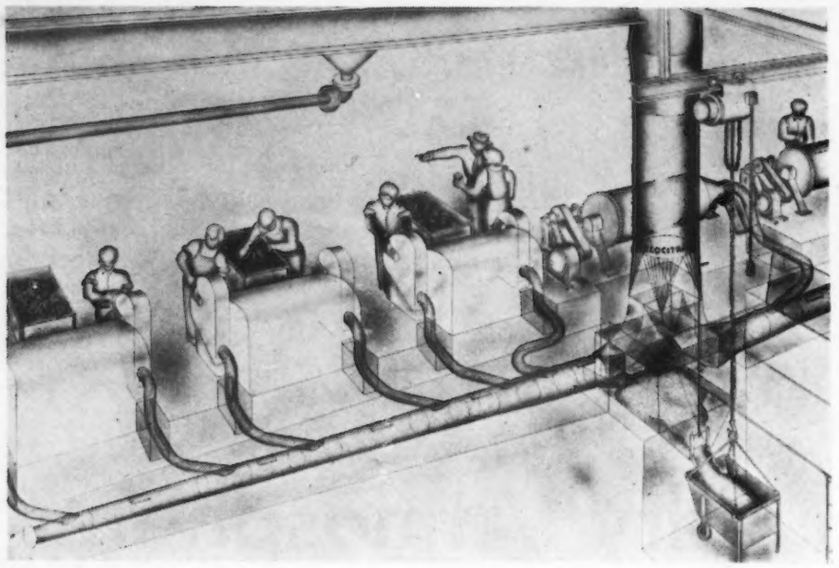
Therefore, before a contract is signed for large sums of money to pull or push air around a building, be sure that you have considered proposals from engineers or contractors who have had ample opportunity to make their first mistakes in foundry ventilation. If the most promising supplier or engineer claims immunity from such error in building and process ventilation, beware; you may be victim number one.

Let us agree, for the present, that extensive foundry reconstruction is beyond our means. What then shall we do about existing quarters?

The foundryman should find out, first, whether his atmospheric conditions are really safe, by having his plant air tested by a qualified industrial hygiene organization or consultant. When assured of effective control at all sources of air contamination, either immediately or after suitable corrections in mechanical equipment, he should carefully relay this assurance to his workers so that they will know they are working in a safe atmosphere. At the same time he should make it clear that some of the responsibility for keeping air conditions under control rests with the production employees, for rarely is it possible to make a dust and smoke control installation foolproof.

Atmospheric samples in foundries usually will be made for dust counting. It is occasionally necessary to test for carbon monoxide near furnaces, combustible vapor in the vicinity of mold or core spraying operations using flammable solvents, and metal fumes near pouring stations. The metal oxide fumes in ferrous foundries are not rated as occupational disease sources, unless substantial quantities of toxic metals are added to alloy steels. In nonferrous foundries, the fume problem is likely to be serious, with particular attention given to lead, cadmium, antimony and zinc. Only a qualified industrial hygienist, experienced in foundry operations, can discover and evaluate all the true sources of possibly harmful air contaminants.

The urgency in the silicosis problem, well known to most foundrymen, is that the disease cannot at present be cured; it is therefore necessary to make certain that it does not develop.



o o o

FIG. 1—Phantom view of exhaust system for grinders and tumbling barrels. Note central settling chamber for heavy dust particles. Photo courtesy Claude B. Schneible Co.

o o o

This is accomplished by insuring an atmosphere that does not contain more than about 5 million particles of silica dust per cubic foot of air, or for general foundry operations where the dust is a mixture of silica (sand), clay, and other ingredients, a dust concentration below 15 or 20 million particles of the mixed dust will prevent the development of silicosis. Some states consider 30 million a safe maximum dust concentration for general foundry atmosphere. Most of the foundries operated by informed management have already achieved this goal in health maintenance and are now on the road to more comfortable conditions as a future objective where possible.

However desirable it might be, it is not essential to attack all possible dust or smoke sources at the same time. In fact, it is unlikely that all air contamination sources will be accurately identified until some of the most intense offenders have been placed under control. It is also well to realize that eliminating the worst dust or smoke sources may effect sufficient improvement so that expenditures thereafter can be made with greater deliberation, if desired. It must not be overlooked that removal of heavy dust concentrations is a matter of some urgency, because accumulation of silica dust in the lung is not a reversible process; in this instance time is no cure. Accordingly, it is sometimes necessary to accept temporary measures of dust control where dust exposures have been shown to be dangerously high.

Before anything else is done to the physical properties, all dust control equipment now in the plant should be returned to its original level of performance. The record of most foundries indicates that good ventilating equipment becomes gradually ineffective, while poor ventilating equipment becomes steadily worse. Of real importance is the discovery that the performance of existing equipment is often a profitable clue to the possibilities of success for a new installation. Occasionally the restoration of nearly forgotten ventilating equipment is a pleasant surprise in really satisfactory control, and the maintenance department may suffer a few highly embarrassing moments.

Make certain that electricians have not inadvertently connected a few of the centrifugal fans to run backwards. (Be assured that this *can* happen without blowing air back through the exhaust systems. All that will happen is a serious reduction in ventilation rate through the fan or blower.) Above all, clean out the near-horizontal runs of ductwork.

Housekeeping and Dust Control

If the foundry building in question is serving as a large dust settling chamber, the disposal of settled dust should not start the cycle of dispersion and settling in motion once again. Dust which is found many feet above the level of its origin is obviously light enough to float and drift with the slightest air current. If it is blown away with compressed air instead of wetted down or removed by vacuum, many pounds of dust will return to its elevated resting place after a relatively short journey in the upper plant atmosphere. By no means will foundry air lift its burden of dust in nearly straight lines to overhead or roof ventilators. Evidence to the contrary is on the upper surfaces of practically every piece of equipment and structural member inside the building. Foundry air currents rarely travel the same course on 2 days in succession.

Some foundry engineers have advocated low flat ceilings in mass production foundries designed without overhead cranes. By this construction, the quantity of general ventilation to provide rapid change of air is reduced in proportion to the reduction in ceiling height, and the local exhaust systems come closer to providing the required amounts of general ventilation for the removal of dust and smoke that inevitably escapes even the best designed dust control systems. Judgment on low-ceiling foundries with forced ventilation must be deferred until a number have been so built and studied.

Dust settling on the foundry roof has an opportunity to reenter the foundry when the wind is in the proper direction to blow it into the air supply inlets. If discharge is high in the air, the major portion of fine dust may be dissipated by the wind, but the heavy fractions will settle over adjacent buildings or back upon the roof immediately below, depending on the character of the wind at the time. Care in locating air inlets far from air exhaust stacks will help to prevent recontamination. Removal of weather caps from relatively high-velocity air discharge stacks gives the air an additional lift into the upper levels of wind motion.

It is often revealing to go up on the roof and watch the dust and smoke from exhaust stacks travel over to the air inlet stacks, windows, or monitors. The first trip may be a disappointment, but if observations are made over a period of a week, the chances are good that the wind will cooperate. The remedy should be obvious, but on some buildings the job of scattering inlets and outlets so that recontamination of the foundry air does not occur may require a large measure of engineering judgment.

If funds are limited and the plant is in a cold climate, consider seriously the purchase of mechanical air supply equipment, with provisions for tempering the air in winter. In a great many cases, the results will be far more satisfactory than the addition of more exhaust fans in the roof or walls. Wherever local exhaust ventilation is used, a good air supply system may actually restore the local exhaust system to its normal capacity for dust and smoke removal. Furthermore, the location of air inlets can be premeditated, windows kept closed to avoid drafts, and the incoming air delivered at points inside the building carefully chosen to cause a general air movement across the workers' breathing zone toward the sources of air contamination, but without stirring up settled dust.

The location of winter air supply ducts should be carefully studied to determine whether they can be partially warmed by stray radiant heat, particularly from cooling castings. Naturally, the air supply problem in summer is quite the reverse, and any radiant-heated sections of air supply ductwork would have to be bypassed for summertime operations.

Enclose any dust-producing equipment as much as production methods will allow, and make someone responsible for the return of panels or hinged doors provided for inspection or maintenance. The overworked maintenance crew is probably not a very good gamble in this respect. Possibly the safety engineer or the foreman should make the final inspection. The dust enclosures usually will require a small amount of ventilation so that leakage is sure to be inward. Do not enclose so completely, however, or use so little ventilation, that everything inside the enclosure is rapidly covered over with an excessive layer of dust.

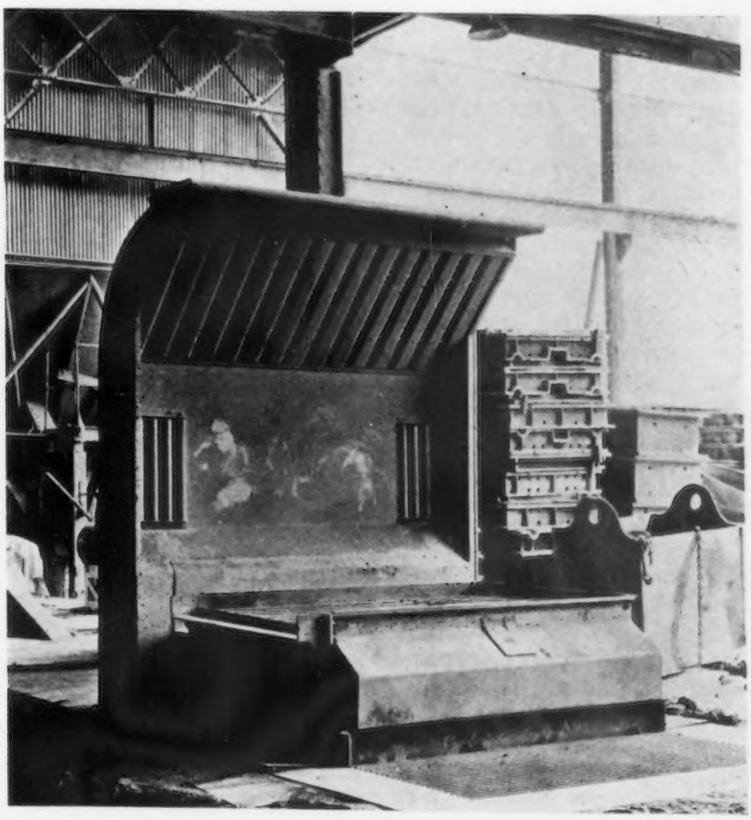
Consolidating the Dust Sources

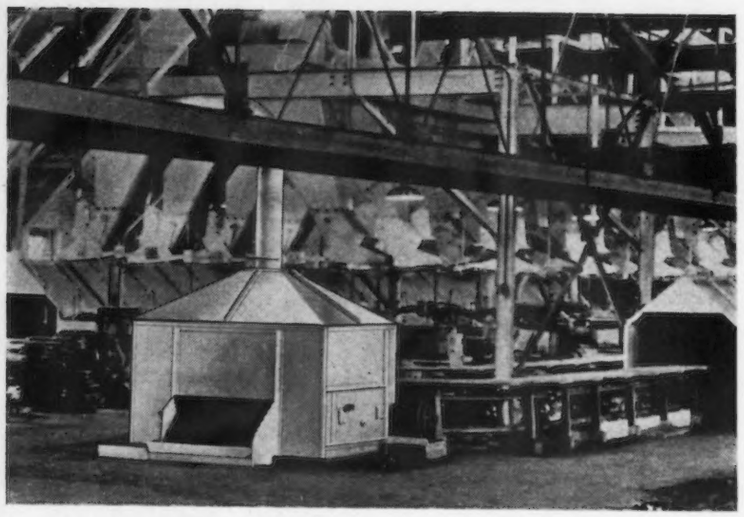
The usual first steps in consolidating dust sources to permit better control are centralizing the shakeout—which requires transport of molds to one or more stations—and mechanization of the sand conditioning process. This, in turn, requires transport of conditioned sand to the mold-

o o o

FIG. 2—Shakeout hood with an enclosure over the inclined belt conveyer serving as the exhaust duct. Photo courtesy Claude B. Schneible Co.

o o o





o o o

FIG. 3—Box-type enclosure for shakeout grate with overhead ventilation. Photo courtesy American Air Filter Co.

o o o

ers. It does not require installation of a mold conveyer, but may present a problem of mold transport to the shakeout station, especially if the castings are large.

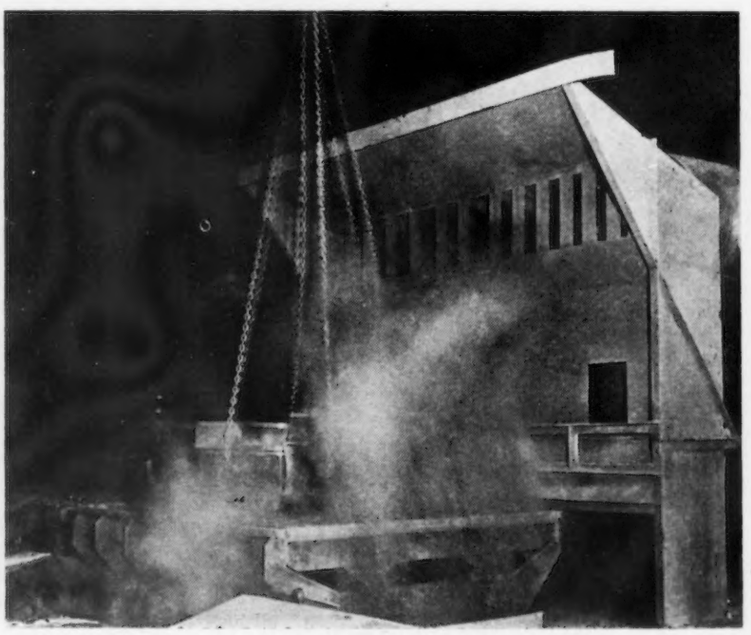
Dust is not created in important quantities during the handling or transport of conditioned sand. This part of the system, therefore, can be bypassed in the initial dust control program.

"From a dust control standpoint, it is unfortunate that all foundries do not have centralized shakeout equipment and mechanical sand preparation equipment . . . The basic principle of effective economical control of dust dictates that a dust producing area be confined and the contaminant removed at the point of generation before dispersion to the workroom can occur. It can readily be seen how impossible the application of this principle becomes where flasks are poured over the entire molding floor area, are upset where they are poured, and the sand cut and mixed in this same large area and piled in heaps at each molding station. Obviously the dust condition during the shakeout and sand preparation phase will be extreme except in those cases where metal pouring temperature is low and sand to metal ratio is so high that much of the sand retains a high moisture content. General ventilation of the foundry is seldom sufficent to prevent excessive dust concentrations, and deferring shakeout and sand preparation until the night shift offers the only means of reducing the number of men subject to such probable exposures. Generous general ventilation, thorough wetting of sand, and supply of shakeout crew with respirators are the usual prescribed protection." (John Kane, University of Michigan Training Course, October 1945).

According to actual air samples and dust counts made by experienced industrial hygienists, it has been established that shakeout, core knockout, tumbling, abrasive blasting, and used sand transporting and conditioning equipment are the most prolific sources of fine airborne dust, when these operations are conducted without ventilation control. They easily provide most of the dust represented in samples of general room air collected at points far removed from the origin of dust. Dust in the range from 1 to 10 microns in size will float in the air for hours, and general ventilating systems are nearly ideal dust dispersion systems.

For locally ventilated equipment that operates intermittently, it is advantageous in the wintertime to interlock its operating motor with that of the exhaust fan motor. If desired, a time delay switch can be used so that the fan does not shut down immediately in cases where dust and smoke are liable to hover in the air.

The smoke nuisance in foundries is often the



o o o

FIG. 4—Exhaust hood along one side of large shakeout platform. This type of hood does not interfere with the conventional chain hoist. Photo courtesy American Air Filter Co.

o o o

o o o

FIG. 5—Shakeout exhaust hoods of the right-angle type, which help to protect the grate against cross drafts. Photo courtesy Buffalo Forge Co.

o o o

last one to receive serious attention. Eye and nose irritation is usually transitory, but specialists in industrial ventilation feel that general impressions of the foundry atmosphere will be uncomplimentary so long as a visible smoke haze and annoying irritation permeates the building interior. Industrial hygienists agree that smoke in ferrous foundries can be rated as a nuisance, which means that it does not produce a known occupational disease. Nevertheless, the foundry industry must view the smoke nuisance as an impediment to good relations with workers and the public. Occasionally the claim is made that especially susceptible individuals may have non-industrial communicable diseases aggravated by exposure to irritant gases in foundry smoke.

As with serious dust sources, a smoke nuisance can best be suppressed by restricting the pouring and cooling areas. General ventilation of the entire foundry is a poor solution. When, however, the plant has gone to the extent of installing mold conveyers with fixed pouring and shakeout stations, it is a mistake not to cover the cooling section between these points with a well-exhausted tunnel to carry away the escaping smoke, fumes, and gases.

Outdoor Air Pollution

Failure to separate the dust from air exhausted from foundries helps to advertise the dustiness of interior processes. The fact that these processes may have highly successful dust control is easily overlooked by the neighbors. Nor will they derive much satisfaction from the realization that dust which has been carried from the plant interior and spread around the neighborhood is dust that no longer has an opportunity to enter the foundryworkers' lungs.

Again, the progressive foundries have years ago realized the implications of discharging tons of fine dust into the outdoor atmosphere, and have installed millions of dollars worth of air cleaning devices in their dust control systems. Wet methods of dust collection seem to be gaining favor over the earlier cloth filter units because of the possibility of a continuous sludge disposal system for the dust extracted from the air.

There is nevertheless a tendency among experienced foundrymen to prefer the dry-type arrestors for dust that contains substantial portions of iron or steel dust, because of the tendency of such particles to oxidize and cake inside ventilating and dust collecting equipment in the presence of moisture. Wet collecting systems can be used if they are carefully designed to flood interior surfaces continuously, but they must not be allowed to stand during idle periods with a load of sludge. Care must be taken with dry collectors to arrange the disposal so that dust will not be blown around the premises either inside or outside the plant, and either during or after removal from the collector.

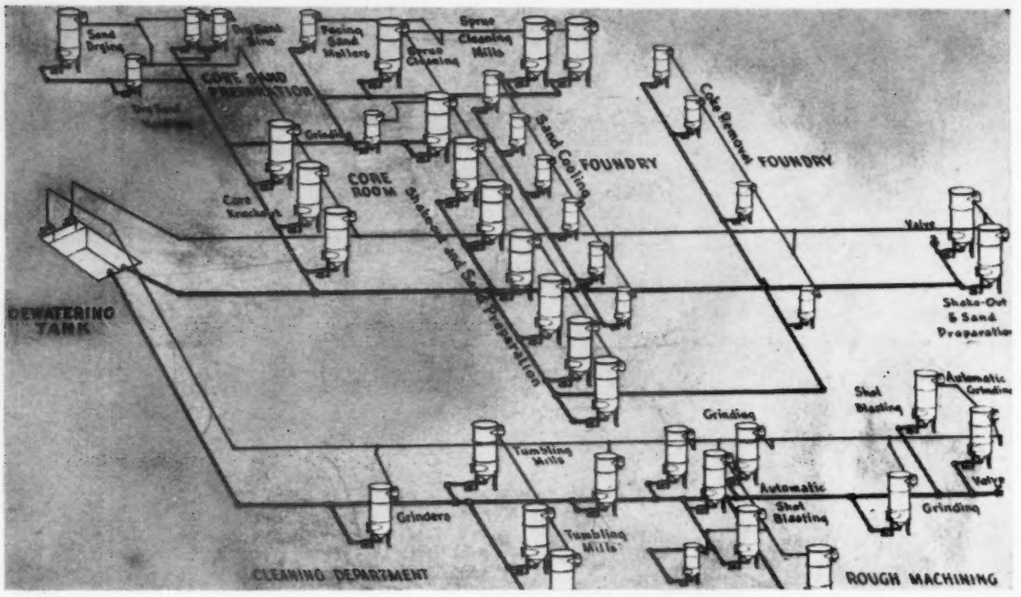
The most recent development in the prevention of outdoor air pollution in the neighborhood of foundries is the growing interest in various forms of washers or scrubbers applied to the stacks of cupolas or furnaces. It has been reported that as much as 24 lb of dirt for each ton of metal melted has been collected by a simple form of cupola gas scrubber. Not the least of the benefits are elimination of heavy loads of dirt on the foundry roof and reduction in iron oxide deposits that discolor glass in windows and monitors.

Monetary Considerations

The best questions of all are: "How much will a system of ventilation and dust collection cost?" and "Will it pay for itself?" The replies are not especially consoling.

Extensive dust control equipment is measured in units of $100,000 for the large plant, and in units of $10,000 for a small foundry. This does not include the costs of plant layout alterations, or structural changes in the building to make dust control feasible.

Cost and production rate analyses to determine the effect of improved working conditions have been complicated by the strains of World War II, postwar labor turnover, and the general trend toward shorter work weeks and lighter work loads. Most of the really significant improvements in



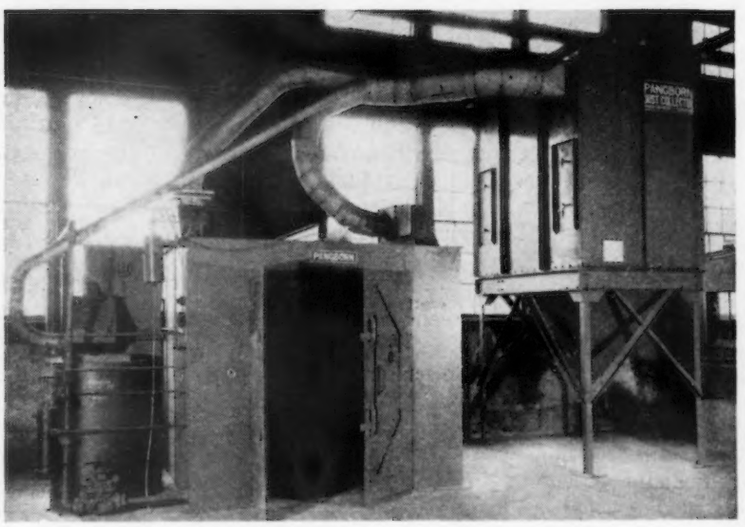
ABOVE

FIG. 6—Diagram of a centralized sludge disposal system for wet dust collectors. Photo courtesy Claude B. Schneible Co.

o o o

RIGHT

FIG. 7—Dust collecting installation for a sand blast room. Photo courtesy Pangborn Corp.



the foundries occurred prior to the war without much time to study their effect on human efficiency, while many improvements are currently in progress, somewhat hampered by the difficulty in getting equipment.

Some dust control systems might pay for themselves in 10 years if they can be persuaded to hold together that long. And some systems actually will mean the difference between operating and not operating the plant, but usually this is not what the inquirer means when he asks about savings.

Sand is notoriously abrasive, and not only keeps maintenance costs high, but wears out some parts of the system in short order, so that outright replacement is necessary. It is this feature of the job that is most challenging to manufacturers of dust control equipment.

A few foundries have studied their costs in an attempt to arrive at some estimate of the more tangible returns on their investment in better working conditions. (One such study was reported in *Foundry*, June 1946.) Most plants have been unable to sort out the concurrent effects of better working conditions and the higher efficiency brought about by more complete mechanization. The best jobs of dust control are done at the same time the plant is converted from a floor-molding or jobbing shop to a conveyerized system.

The real truth seems to be that most of the increased efficiency, higher production, higher product quality, reduced fatigue, and consequently reduced unit costs must be credited not to the ventilation and dust control equipment, but to concurrent mechanization of the foundry processes.

The extensive dust and smoke control system in many cases is a necessary outcome of the mechanization program, and its absence from such a program would be both dangerous and costly. To this extent then, the air handling equipment could be credited with keeping down the operating costs.

So far as the working force is concerned, computing the financial results of improving the

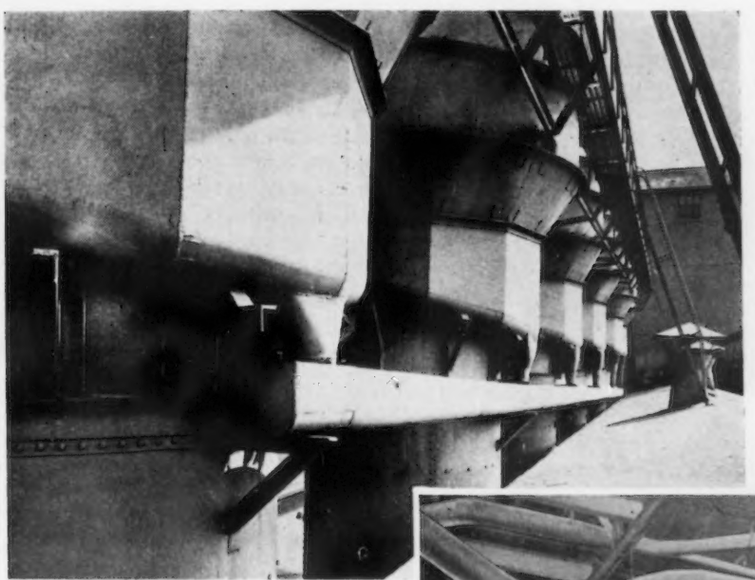
foundry atmosphere is somewhat like placing a monetary value on goodwill, good health, satisfactory labor relations, community approval, reputation for progressive action, and other attributes of good management. The costs of maintaining the ventilating and dust collecting systems in some plants seem to cancel most of the possible savings in reduced labor turnover. Yet, the ability to maintain production by avoiding mechanical shutdowns, or by preventing stoppages arising from fear of dangerous dust exposures, is a valuable asset that is commonly taken for granted. Foundrymen who have lived with all kinds of plants do not question the value of good atmosphere control, but they usually are not in position to express the value in dollars or unit costs.

The financial returns on the investment in better foundry atmospheres must inevitably be measured in terms of the restoration of public agreement that "the foundry is a good place to work." Those foundries that can see the best prospects of simultaneously reducing the cost of the product by spending more on the control of atmospheric conditions, logically will be the first to carry out such a program. Some plants will be forced to pass on to their customers the cost of improved conditions for workers. This means that hundreds of thousands of dollars that will be paid for more desirable atmospheric conditions in foundries must appear temporarily as reduced profits or increased prices—although the long term result is undoubtedly reduced costs and increased profits.

Coordination of Atmosphere Control

In view of the growing complexity of building and process ventilation in foundries, it becomes highly advantageous to make someone responsible for complete coordination of the entire air handling equipment. He should be willing and interested in studying the adjustment of windows, monitors, and other large openings to compensate for unfavorable weather conditions. He should be given time to observe all ventilating equipment in operation under the influence of all kinds of weather and internal disturbances; to determine whether local exhaust hoods are disturbed by air supply openings or man-cooling fans; to study any opportunity for enclosing or baffling dust and smoke sources that are now exposed to cross drafts; to make certain that good quality air is not wasted to the outdoors by short circuits in the system; to assure the management that air contaminants removed from dust collectors are being safely disposed; and to perform numerous other details of air and dust control that no one else in the plant can find time to do.

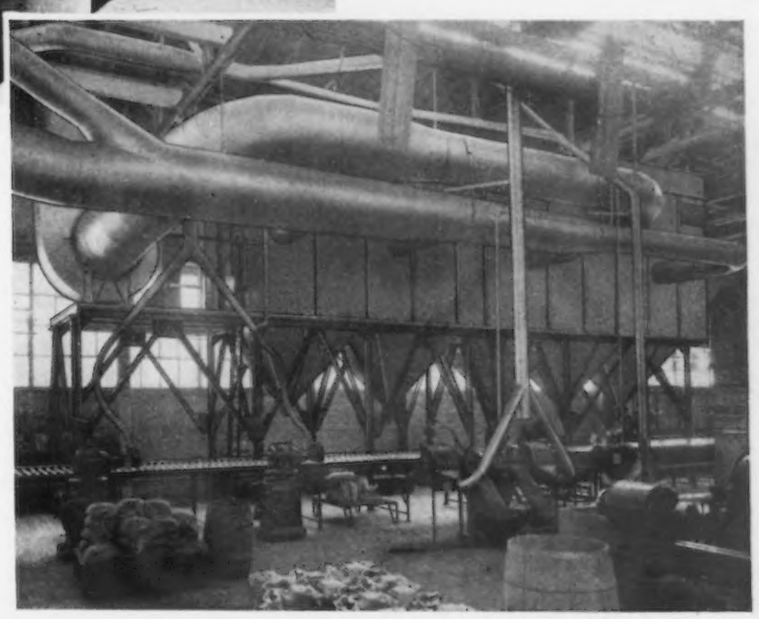
A program of indoor and outdoor atmosphere control in a foundry will not be a notable success unless it engages the special interest and concern of one competent individual, either in a supervisory capacity, or as the plant engineer, ventilating engineer, or sole maintenance engineer.



ABOVE

FIG. 8—Close-up view of dust arrestors on cupola stacks. Note the trough which carries away the drainage from all six arrestors. Photo courtesy Buick Motor Div., General Motors Corp.

o o o



RIGHT

FIG. 9—Dust collecting installation in the grinding room of an aircraft plant. Photo courtesy American Wheelabrator & Equipment Corp.

Practical Aspects of Surface

By H. E. BOYER
Chief Metallurgist, American Bosch Corp., Springfield, Mass.

o o o

SINCE work being processed by the liquid method is protected during the carburizing cycle as well as during the short interval between heat and quench, there is no opportunity for scale to form. The only cleaning necessary is to dissolve away the salt which has adhered and solidified. If water quenching is employed, the parts usually come from the quench quite free from salt, but when the work is oil quenched there is far more tendency for the salt to adhere so that it is usually necessary to clean in hot water. When using a salt composition high in barium content (insoluble in water), one of the commercial cleaners may be required.

Due to the fact that there is always some nitriding action when using salts high in cyanide, the surface after liquid carburizing is mildly corrosion resistant if no subsequent grinding operations are performed. It should be kept in mind that due to this type of surface, liquid carburized parts are not well adapted to subsequent treating to obtain a black oxide finish.

Possibilities and limitations of pack and liquid carburizing were discussed in the first part of this article, August 14, 1947, p. 74, THE IRON AGE.—Ed.

Depending upon the hardening characteristics of the particular steel being processed, oil, water or brine quench may be employed for liquid carburized parts. One should never quench parts from a liquid carburizing bath into the common nitrate-nitrite salt quenching baths, because of the two types of salt not being compatible. Not only is there danger of an operator becoming badly burned, but poor results will also be found, because the mild explosion which takes place seems to prevent a sufficiently rapid quench. If it is desirable to marquench liquid carburized parts, it is a much better practice to use a marquenching oil as a quenching medium rather than any molten salts.

Liquid carburizing is another process which can be carried on successfully without the aid of highly trained personnel. If the equipment is maintained carefully and simple rules are followed in processing, there is no reason why desired results cannot be duplicated day in and day out.

When parts to be processed are of such design that it is necessary or desirable to surface harden only certain portions, the liquid process is not usually found to be practical. It is true that some stop-off materials have been recommended for insulating parts from carburization in the liquid bath, but it has been the author's experience that they were either impractical to apply or that they did not function to the extent that they could be depended upon for practical operation. There is one exception to this general rule when parts cannot be hardened locally in a liquid salt bath. Parts are sometimes designed so that they can be only partially immersed in the molten salt—such as shafts, spindles or members of similar design—and when held by suitable fixtures, only the portions which are to be hardened are held in the salt.

Hardening by Gas Carburizing

Surface hardening by gas carburizing has been received and put into practice with increasing enthusiasm during the past 20 years or more. This method possesses many advantages and has but few limitations. Design of the parts is usually no factor, since the process will lend itself to processing parts of nearly any design, as well as to steel of any composition which can be surface hardened by any other carburizing method.

Fig. 5 illustrates a typical gas carburizing installation. This particular furnace is electrically heated and has a motor-driven fan so that a uniform circulation of the carburizing gases all during the cycle is assured. The atmosphere is furnished by pumping an oil of special composition into the furnace by means of a fuel injection pump which controls the flow of oil very accurately. As the oil enters the hot furnace, it quickly "cracks" into its components, resulting in the desired atmosphere for reaction chemically, with the surface of the work.

There are other means of creating the carburizing atmosphere. Natural gas, where available, is widely used and gives excellent results. The use of bottled gases such as propane is practiced

Continuing his practical analysis of the possibilities and limitations of various surface hardening methods, pack carburizing, liquid carburizing, gas carburizing and nitriding, and the applications for which each is most suitable, the author discusses the advantages and limitations of gas carburizing and nitriding, in this second part of a two-part article. Precautions to be observed to obtain best results are given.

Hardening Methods

in some plants and seems to work out quite satisfactorily. Gas carburizing is definitely faster than the other methods. The upper curve in fig. 1 (Part 1) shows approximately the case depth which can be expected in a given time. The carburizing temperature was 1650°F. As in case of the other methods previously discussed, the carburizing rate can be speeded up by increasing temperature, but it must be remembered that higher temperatures decrease the life of the internal furnace parts, so that whether or not it is economical to carburize at 1700° to 1750°F is always questionable.

Referring again to fig. 1, carburizing time is the time at temperature (1650°F)—no allowance having been made for the time required to bring the furnace to temperature. The gas carburizing process also has a distinct advantage of being capable of producing a wider variety of physical properties than can be obtained by the liquid or pack methods. In the pack and liquid carburizing processes it is not possible to exercise any extensive or accurate control over the amount of carbon which is absorbed by the steel, whereas in gas carburizing it is possible, by means of a carefully controlled cycle, to obtain a carbon content in the surface layers which is within a very narrow range as well as to obtain a well-diffused case. By the gas carburizing process it is also possible, without removing parts from the furnace, to decrease the temperature from the carburizing temperature to a suitable quenching temperature during which time the parts remain protected by the furnace atmosphere.

In instances where desirable it is also possible to furnace-cool the work. Many such furnaces are equipped with a cooling system to speed up this operation. It is a common practice to lift the whole charge out after the carburizing cycle and to cool in a specially constructed cooler. At the same time, another charge can be ready for the furnace so that there is but little lost furnace time. This procedure is often carried out when it is necessary to perform some machining operations between the carburizing and hardening operations. By the use of good equipment and the aid of careful control the case depth can be controlled within a very narrow range, and it is obvious from the above discussion that the gas carburizing process will lend itself to economically carburizing large volumes of work on a high production basis.

It should be obvious, that inasmuch as some time is consumed in sealing and bringing the furnace and charge to the desired carburizing temperature, it is necessary in order to carburize economically, to completely load the furnace with similar parts; that is, parts of the same composition and demanding the same case depth. Small lots of miscellaneous work of varying composition and requiring different case depths can usually be processed much more economically by the liquid method. Gas carburizing cannot, in most cases, be carried on in an economical manner in single-shift operation, particularly when deeper cases are desired.

The process is much better adapted to the two or three-shift operating time. If the charge is cooled between the carburizing and hardening operations, the work can usually be planned so that two-shift operation will work out satisfactorily, while if the work is being directly quenched, the full three-shift operation is, in general, the most economical.

For obtaining the cleanest work by the gas carburizing method it is necessary that parts be free from oil and dirt when loaded into the furnace. This can be accomplished by degreasing or washing in any of the many common washing machines. If this precaution is observed and other rules of gas carburizing practice are followed, relatively clean work will be the result. By relatively clean it is meant that there is apt to be, with the best of practice, some soot deposit, and it must be remembered that work quenched directly from the gas carburizer is unprotected during the transfer from the furnace to the quenching medium, during which time a slight amount of oxidation is bound to take place. In other words the work, after quenching from a gas carburizer can be expected to be black, but free from loose scale. Soot deposits will usually break free in the quench.

Heavy deposits of soot are very objectionable because they interfere with the quenching. Heavy deposits are not normal, however, so that when excessive soot is noticed, the entire process should be stopped and a thorough check made of the

equipment and method. A surface hardened by gas carburizing possesses no particular corrosion resistance. It may be that with the relatively new method of "dry or gas cyaniding" which involves the introduction of ammonia gas along with other gas used for carburizing, some corrosion resistance may be imparted to the surface. The author has not as yet made any study of this process, so that it will not be discussed in this paper. It just seems logical to assume that this new modification of gas carburizing which does have a nitriding effect along with carburizing would give results similar to those obtained by liquid carburizing as far as the superficial case is concerned.

Any of the well-known quenching media may be used in conjunction with the gas carburizing practice, considering of course, the hardening characteristics of the particular steels being processed. The gas method is particularly adapt-

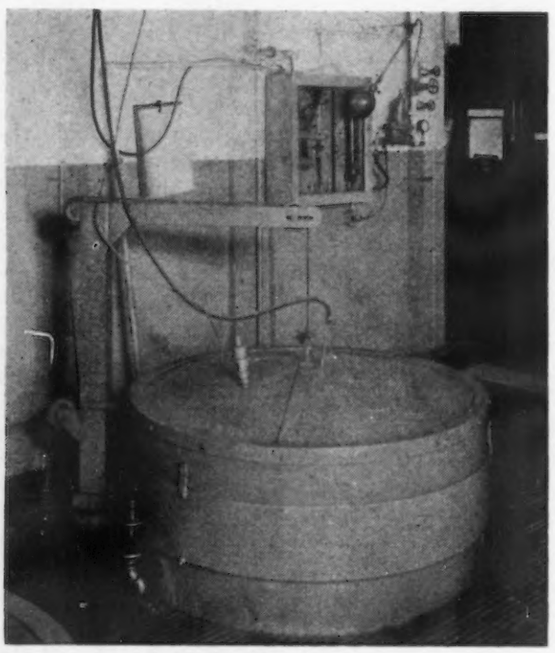


FIG. 6 — Pit-type nitriding furnace. Photo courtesy American Bosch Corp.

able to use in conjunction with marquenching the alloy carburizing types of steel. For example, a cycle which produces excellent results on any one of several alloy carburizing steels is as follows: (1) Gas carburize at 1650° F to desired case depth, (2) adjust atmosphere so as merely to obtain protection for about ½ hr to allow for diffusion of the case, (3) decrease temperature to 1475°F, (4) quench to an agitated salt bath at 450°F for sufficient length of time to allow work to assume 450°F, (5) air cool to room temperature, (6) wash parts free of salt in boiling water, and (7) temper to desired hardness (250° to 300°F if it is desirable to retain nearly maximum hardness).

One modification which can be satisfactorily applied to the above procedure is to quench the work from the 450°F salt bath into boiling water. This practice works out to a greater advantage for parts which have deep recesses and blind holes, as an aid in the removal of the quenching salt. The time period between the salt quench and the hot water quench is not at all critical, providing the parts are still hot enough prior to the boiling water quench that the quenching salt has not yet solidified. After hot water quenching the work should be allowed to cool to room temperature prior to tempering in order that transformation will not be suppressed. This cycle of carburizing and hardening is given as an example of one which will produce clean work with a minimum of distortion and retained austenite.

Most gas carburizing installations are electrically heated though fuel firing has also been proved successful. The cost of fuel v. electricity in a particular locality is always a factor to be considered in selection of equipment.

There is no getting around the fact that since gas carburizing involves more complicated equipment than the other two carburizing methods previously discussed, more experienced personnel is required if satisfactory and consistent results are to be obtained. This does not mean that highly skilled operators are necessary, but it does mean that the operators must understand the equipment and the processing, or scrapped work and damage to the relatively intricate equipment may result.

For parts which are to be locally carburized, the gas carburizing practice does present some problems. While this local carburizing can be accomplished much easier in the use of the gas process than by the liquid method, it is not as easy as by the pack method. The commercial copper paint compounds will not stop-off satisfactorily, so that the portions to be kept free from carburizing must be electroplated with copper. A minimum of 0.001 in. of copper is recommended to insure a good stop-off in the gas process. Another method practiced in many plants to obtain selective carburizing is to plan the sequence of machining operations, so that there is still a sizable amount of stock left on the portions which are desired to be finished free from carburization. The work is then carburized and slow cooled after which further machine operations are performed. The work is then hardened by reheating to the suitable hardening temperature.

Nitriding is not usually considered as being competitive to the carburizing methods for surface hardening. Instead, nitriding has found its place mostly in fulfilling the increased requirements for engineering materials which have been put to work in unusual applications. Nitriding has been viewed quite skeptically by industry due to the cost. It is readily conceded that nitriding is rather expensive due to the (1) initial cost of a steel suitable for nitriding, (2) cost of machining such steels, and (3) cost of heat treatment including the preliminary heat treatment, unless the steel is purchased in the heat-treated condition, as well as the actual nitriding operation. It should not be overlooked that, as in case of many other processes, a more expensive method may in some cases be cheaper in the end because of the added properties obtainable by the more expensive procedure.

Nitriding lends itself well to parts of the most

intricate and unusual designs. Due to the fact that the nitriding operation is carried on at a relatively low temperature and that no quenching operation is necessary, it naturally follows that deformation will be held to a very minimum and the danger of hardening cracks entirely eliminated. It is possible to surface harden parts which are almost out of the question when only carburizing methods can be used. The most important factor to be considered in the design of parts to be nitrided is the elimination of sharp corners. It is not always necessary that edges and corners be actually rounded, but they must at least be broken by such means as an oil stone. The nitride case is extremely hard and brittle, so that at sharp edges and corners a concentrated buildup of nitride is inevitable and chipping of the case is likely to occur.

The number of different compositions of steel which will satisfactorily lend themselves to being successfully surface hardened by nitriding is very much decreased as compared to the types which can be carburized. Research work done over the past few years has shown that there are, however, a number of steels besides the regular Nitralloy types which can be successfully processed by this method. The Nitralloy types give better properties than most of the others, but for many purposes some other types will fulfill requirements. It is not possible in this paper to discuss the nitriding steels at any great length. A number of low and medium carbon alloy types such as SAE 4140 and 3316, straight chromium or chromium-molybdenum types of stainless and a number of different tool steels will nitride satisfactorily. The nitriding steels containing aluminum usually give results somewhat superior to those obtained in nitriding the more common alloys apparently due to the fact that the case shows a more pronounced diffusion.

The relatively shallow case depth obtained is one of the disadvantages of nitriding. Due to the very small amount of deformation encountered and the clean surfaces of parts after nitriding, the parts can be finished or at least almost finished prior to processing. In many applications a heavy case is not absolutely necessary, therefore a file-hard, wear resisting surface can be obtained in a very few hours of nitriding time. Nitriding operations are carried on by most plants in cycles of 8 to 50 hr, depending upon the desired depth of case. The number of hours in the cycle is referred to as time at temperature. It must be remembered that after the furnace is sealed, it must be purged with ammonia to not more than 10 pct air before the temperature is allowed to rise above 300° F. After the purging is done the furnace must then be brought to temperature before nitriding time is counted. The time required for purging, bringing to temperature and cooling is entirely dependent upon the type and size of installation. Fig. 6 is a photograph showing a typical nitriding installation. This furnace is a round pit type with an oil seal and double control instruments. After this particular furnace is loaded and sealed, about 2½ hr is required to purge it, using an ammonia flow of 30 cu ft per hr. About 1¼ hr additional is then required to raise the temperature from 300° F to the nitriding temperature of 960° F. This installation, by the use of the rapid circulating cooling system, can be cooled from 960° F to an unloading temperature of 300° to 400° F in approximately 1½ hr for an average charge. Therefore one must add 5 or 5¼ hr of time to the actual nitriding time for the complete cycle.

The physical properties of parts surface hardened by nitriding can be varied to some extent by selection of steel and preliminary heat treatment. It must be remembered that the highest hardness one can retain on the core is that which can be retained in the heat-treated material after being tempered at a temperature equivalent to the nitriding temperature. It is never good practice to attempt to nitride any steel which is in the fully annealed condition. The best practice is to fully harden the steel and then to temper at 1000° F or higher, depending upon the desired hardness in the core. This heat treatment may be performed on the bars or forgings at any stage in the sequence of operations just so at least 0.030 in. of stock is removed from all surfaces between the heat-treating and nitriding operations. This, of course, is to eliminate the possibility of nitriding on a decarburized surface. Nitriding is absolutely unsuccessful if even partial decarburization is present.

The nitrided case can be controlled closely in depth by the time at heat, though the case is

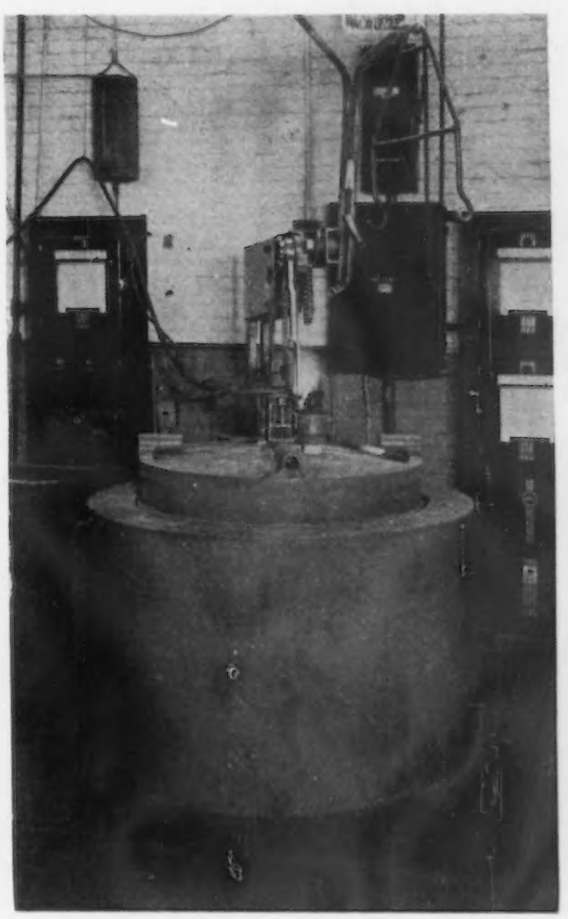


FIG. 5—Typical gas carburizing furnace. Photo courtesy American Bosch Corp.

always hard and brittle with a very high resistance to wear and abrasion, but with very little resistance to impact. Maximum resistance to chipping and spalling is obtained by using a deep case and a core with maximum hardness, although nitriding is not usually to be recommended for applications where parts are subjected to shock in operation.

In considering other physical properties, nitrided parts are definitely superior to those which have been carburized in two respects, (1) heat resistance and (2) corrosion resistance. Any type of carburized case loses hardness rapidly when heated beyond 300° F, while a nitrided part may be operated for long periods of time at temperatures as high or higher than the nitriding temperature without loss of properties. Parts surface hardened by nitriding are quite resistant to many forms of corrosion particularly if the nitrided surface is not finished by grinding and the original nitride surface is left.

If simple processing rules are carefully followed and the nitriding furnace is equipped with an internal fan to insure constant circulation of the nitriding gases, there is no reason why there should be a variation of case depth as long as the same material and length of cycle is employed. Highly skilled operators are not necessary to produce excellent and consistent results with the nitriding process. The process is not at all difficult to perform, but merely requires care from the time the parts are prepared for loading until the cooling cycle is ended. By strict adherence to simple rules good results can be obtained by semiskilled operators. One major reason why this can be done is because the nitriding temperature is low as compared to carburizing temperatures, and maintenance of the equipment is almost nil. This condition also influences the cost factor, for even though the initial equipment cost of a good nitriding installation is quite high, the cost of maintenance is negligible.

The nitriding process can frequently be adapted to single shift operation, although it is very much dependent upon the length and planning of the cycles. Little or no attention need be paid to the process after the furnace is purged, brought to temperature and the ammonia flow adjusted to predetermined settings.

Since parts after processing are hard, clean and silvery in appearance, the necessity of quenching equipment is entirely eliminated and the only cleaning equipment necessary is some simple method of removing oil and grease from parts prior to nitriding.

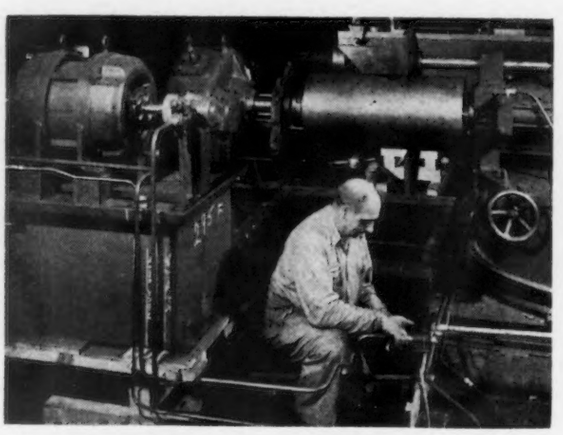
Most nitriding furnaces are heated by electricity though fuel-fired installations have been used. Due to the fact that a nitriding furnace usually receives little attention during the relatively long cycles, a fuel-fired installation is regarded as unsafe and should not be considered in most instances.

Stopping-off areas of parts to be nitrided is a simple matter. In most all cases threads should be stopped-off, and it is often desirable to leave other portions soft for various reasons. It has been the experience of the author that tin oxide paint is the simplest stop-off and the most satisfactory. Electroplating with tin or nickel is also used in many plants though it must be remembered that a porous plate is worthless—paint is easily applied and always gives full protection.

Slitting and Trimming Unit Gives Speeds Up to 800 fpm

SPEEDS from 150 to 800 fpm with sustained high torque at low speeds, ease of control, and simplicity of power equipment are said to be advantages of a hydraulically operated steel slitting and trimming line designed and built by Steel Equipment Co., Cleveland, for a venetian blind manufacturer. This 30-in. line shown in the accompanying illustration is believed to be the first all-hydraulically operated unit of this type and has been designed to handle cold-rolled steel from 0.008 to 0.062 in. thick, winding 6000 lb coils.

The unit consists of an unwind reel and slitter, located in the background in the photograph, and a pull-through, double-swing reel, located in the right foreground. Parker tubing and fittings lead to the power unit located at the left. The unwind reel is provided with a segmented mandrel operated by a hydraulic cylinder to accommodate coils of various core sizes. Another cylinder actuates an unwind reel brake, establishing tension to the slitter which has a small fluid motor for threading during setup. A large fluid motor drives the winding reel, while hydraulic cylinders actuate the push-off mechanism used to unload finished coils from this unit. Duplicate controls are located at the slitter and at the pump station. Hydraulic straight-motion and rotary power functions are thus logically integrated in a single system.



A continuous pipe galvanizing process, capable of coating up to 600 tons of 2-in. pipe every 24 hr, is described in this article. Developed by National Tube Co., this process is said to produce zinc coated tubular products having smoothness, luster and uniformity of coat superior to that produced by earlier batch type galvanizing methods.

Continuous Galvanizing

By A. D. STOUT, JR.
THE IRON AGE

A CONTINUOUS pipe galvanizing process, which produces zinc-coated tubular products having a superior smoothness, luster and uniformity of coating than that produced by earlier batch-type galvanizing methods, has been developed by National Tube Co., a subsidiary of U. S. Steel Corp. In addition to improved pipe quality, the mechanized process offers marked advantages in high production rate and low cost. Fig. 2 shows a typical continuous pipe galvanizing unit of the type now being installed in National Tube's new buttweld mill at Lorain, Ohio. This unit can coat up to 600 tons of 2-in. pipe every 24 hr.

Several outstanding features are incorporated into the new process. Its continuous nature permits a number of pipes to undergo processing at one time and provides for the continuous discharge of individual galvanized products from the kettle without halting the galvanizing operation to change individual batches or handle individual pieces, as required by batch-type and wiping or blowing methods. The simultaneous passage of a number of tubes through the galvanizing bath allows a high production rate to be achieved and still permits a very slow, successive withdrawal of individual pieces from the bath. This slow withdrawal permits sufficient time for natural drainage to return to the bath all surplus zinc which, in earlier processes, was lost by removal from the pipe by wiping or blowing. It also results in a smoother coating on the exterior of the pipe than could be obtained by batch processing methods.

It is possible to operate a continuous kettle with a bath temperature of about 850°F, or about 50°F lower than that required for the batch-type process. The lower operating temperature, combined with the natural drainage of surplus coatings, achieves a very efficient utilization of zinc as compared with the wiping and blowing processes by placing the zinc on pipe as galvanized coating instead of converting it

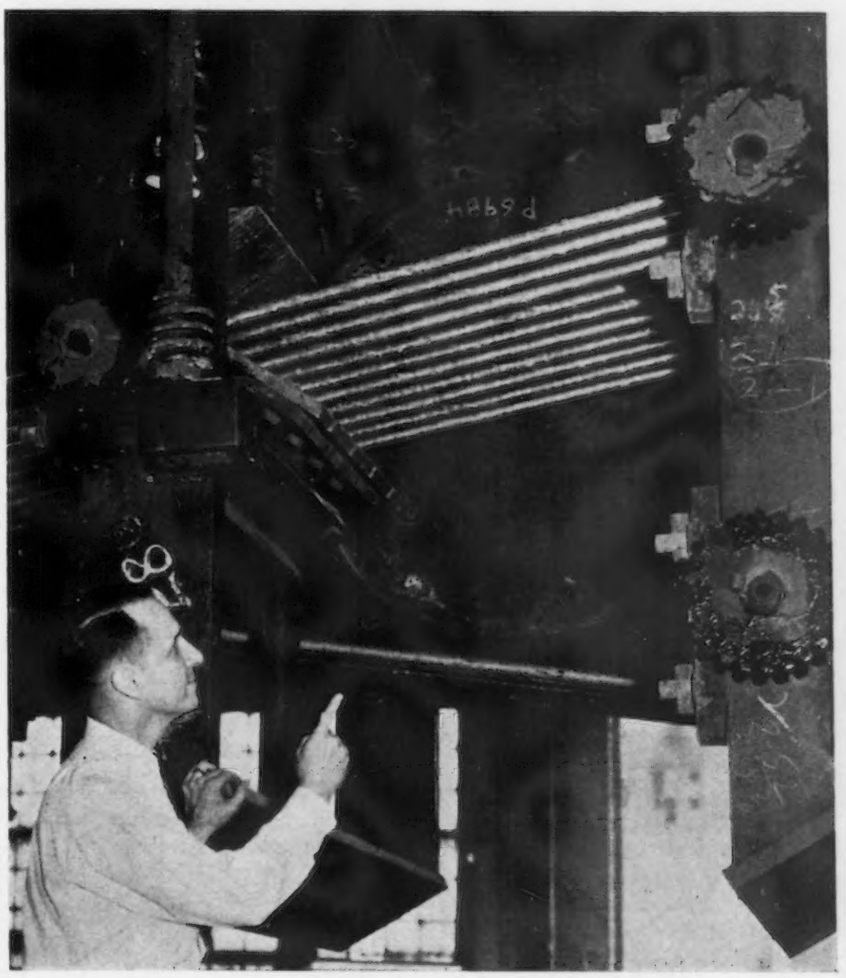


FIG. 1—Detailed view of the cam dunker which changes the direction of travel of the pipe from the ingoing to the outgoing angle.

to such waste products as zinc-oxide and dross.

In continuous galvanizing, after fluxing and predrying, tubular products are fed to the ingoing table of the continuous galvanizing unit. A combined forward and lateral movement is imparted to the pipe by spirally grooved rollers, so that pipe fed into the one corner of the kettle leaves the kettle at the diagonally opposite corner.

When the pipes enter the kettle, they are traveling on a downward slope. Shortly after each pipe is completely immersed in the molten zinc bath, the direction of its travel is changed from the ingoing to the outgoing angle by vertically pivoting the pipe on the center roller which is common to the ingoing and outgoing series of rollers. This is accomplished by allowing the trailing end of the pipe to run off the end of a short, spirally grooved roller on the ingoing table, and then forcing the trailing end of the pipe downward by means of a continuously rotating cam machine (shown in fig. 1) which is synchronized with the rate of travel of the pipe, as determined by the rate of rotation of the spirally grooved rolls. Position of the pipe is controlled by guides so that it drops into the proper groove of the bottom roll of the outgoing table. Action of the cam applies a gradually developed pressure which avoids any tendency to bend pipe of the smaller sizes.

As the pipe emerges from the kettle, cooling air is directed onto its surface to cool and set the coating rapidly while it is still smooth and to preserve a bright, metallic luster. This rapid cooling also prevents the excessive growth of zinc-iron alloy in the coating, a major cause of brittle or poorly bonded galvanized coatings.

The pipe is discharged in a horizontal position from the outgoing table from which it is picked up successively by dogs on a multi-chain type conveyer and carried through a dilute aqueous solution of sodium dichromate. Immersion in this solution produces on the pipe a microscopically thin surface film of zinc chromate, which preserves the luster of the coating while in stock.

The galvanizing machine is an integrated unit that can be handled into and out of the kettle by electric overhead traveling crane. When in position in the kettle, the mechanism is suspended on structural members supported by foundation piers built entirely separate from the kettle setting. Separate support for the mechanism aids in maintaining the exact alignment of operating members essential to trouble-free operation.

Dimensions of the kettle are worked out to provide uniform and close control of molten zinc temperature, while providing a batch sufficiently large to accommodate the machine. A sufficient volume of molten zinc is necessary to provide a bath with sufficient heat storage to offset the chilling effect of the cold pipe entering bath. By eliminating rapid temperature changes in the bath, it is not necessary to resort to hard firing to keep the molten zinc at the desired temperature level for a given throughput. In a properly designed installation, heat can be supplied at such a rate as to prevent the excessive dross formation and short kettle life that results from hard firing. Hot spots on the kettle walls, which shorten pot life, are especially avoided. Temperature uniformity of the bath is improved and the problem of uniform heat input at low rates of firing is simplified by the use of a multiplicity of small burners fired with gas of approximately 500 Btu per cu ft heat content. This method of firing distributes heat evenly over the walls of the pot and prevents localized overheating effects that would occur if such a large kettle were heated by only a few burners of high capacity firing at high rates.

From a use standpoint, the most significant contribution is the uniformity of galvanized coating obtainable by this continuous process. The protection afforded by zinc coating is, according to U. S. Bureau of Standards, directly proportional to the weight of coating in ounces per square foot. Not only is a coating of fully adequate weight applied, but because of its automatic and continuous application, the user also is guaranteed that the coating is uniformly and evenly distributed over the entire pipe surface. The more uniform coating should result in more uniform resistance to corrosion.

The continuous galvanizing machine was developed by Paul C. Ely at National Works of National Tube Co., and is covered by U. S. Patents Nos. 2,326,843 and 2,326,844.

o o o

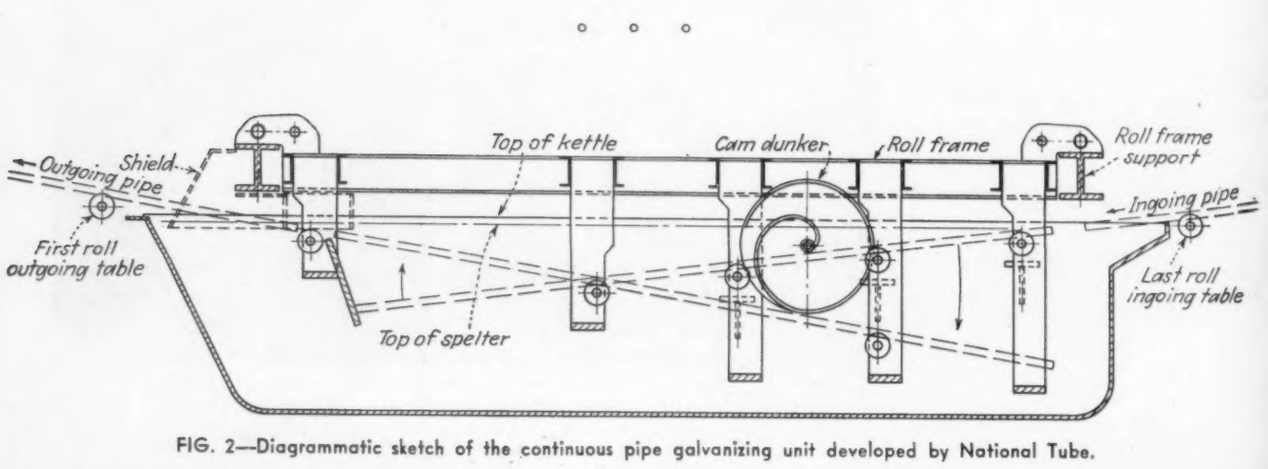


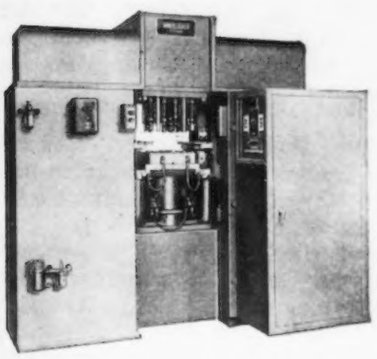
FIG. 2—Diagrammatic sketch of the continuous pipe galvanizing unit developed by National Tube.

New Equipment . . .

New models in multiple welders, jig grinders, ram type milling machines, cold parts cleaning units, stiffness tester, electric motors and a pressure control pilot are described in the following pages. Also discussed are anti-sparking equipment, plastic dip coating, silver solder, anti-rust paint, sound-proofing material and aluminum nails.

Multiple Welder

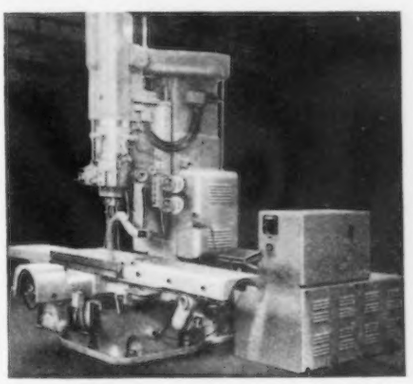
HOT upsetting, spotwelding and projection welding of intricate small parts to a steel panel are said to be accomplished in one operation with the Type MGMS2-8 multiple welder manufactured by *Sciaky Bros.*, 4915 W. 67th St., Chicago. The welder is an open-throated assembly of individually controlled welding guns with transformers and control equipment mounted on either side. Parts to be welded are placed in a locating jig by one operator while another operator places another loaded jig over the retractable lower platen. Releasing jig drops all parts into lower dies while operation on other side of machine is placing panel in position. An air



cylinder then moves the platen up until a special contact is made with conductor from transformer, and upper electrodes, which are positioned to fit parts, are in welding position. The welding regime can be set to any sequence by means of telephone jack type control board. Operation is 3-phase.

Jig Grinder

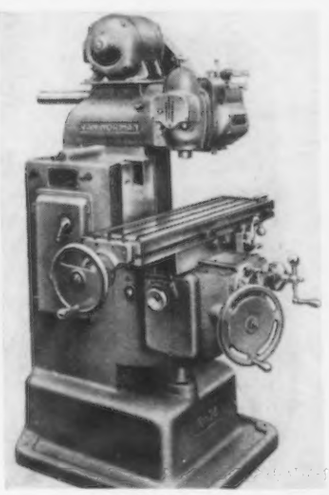
DESIGNED for grinding holes to jig borer spacing and precision grinding finish, the No. 2C jig grinder has been developed by *Pratt & Whitney, Div. Niles-Bement-Pond Co.*, West Hartford, Conn. The machine has capacity to handle a wide size range of work with a table surface 22 x 44 in., a 36-in. longitudinal travel and an 18-in. transverse travel. The work does not revolve. The grinding wheel head has an adjustable circular motion about the vertical axis of the hole being ground, and may be fed outward in an increas-



ingly larger radius until the hole is finished to size. The main spindle is driven by a ¾ hp, 1200 rpm motor through a variable drive, producing spindle speeds from 35 to 200 rpm. A separate ½ hp 900 rpm reversing motor and variable drive provides power for the spindle vertical travel. The grinding wheel is mounted on either of two wheel heads which have built-in sleeve type motors. Each head has eight speeds: the smaller one, used for holes up to 1 in., has speeds ranging from 13,200 to 54,000 rpm; the larger head used for holes from 1 to 5 in. diam has speeds ranging from 6600 to 27,000 rpm. The main head has a 15-in. travel on the column face, plus a spindle vertical travel of 6 in. There is an angular adjustment for grinding tapered holes up to 5° angle.

Milling Machine

THE model 16 ram type milling machine introduced by *Van Norman Co.*, Springfield, Mass., is suited for tool room, pattern shop, die and mold shop and similar installations for general purpose milling. The machine features an adjustable cutter head and movable ram which permits horizontal, vertical as well as angular milling, with standard milling cutters and conventional milling practices. Most work can be carried through to completion without change in setups, it is said. Controls are mounted on the side of the column. A single lever starts the spindle, feed and coolant and also reverses the spindle. Power feed provides table longitudinal travel of 18 in. Table feeds and spindle speeds are controlled by



quick change levers which provide for 9 feeds ranging from 0.6 to 16 ipm. Nine spindle speeds from 95 to 2000 rpm are selected by two levers. Table size is 37 x 9½ in.

Press Roll Feed

AN automatic friction roll feed designed for standard punch presses has been announced by *Benchmaster Mfg. Co.*, 2952 W. Pico Blvd., Los Angeles 6. The feed is designed for use with metal, wood, plastic, etc. Performance and construction features include:

Friction drive geared down to give 0 to 3-in. adjustment in feed; stock capacity up to 3 in. wide; adjustment for stock thickness from 0 to

3/16 in. in thousandths; height adjustment from 0 to 2¼ in.; max operating speed of 285 per min; quick roller reverse from forward to backward; and adjustable brake. A two-bolt installation permits changing from front to side of press; rollers are hardened and ground.

Grinder-Polisher

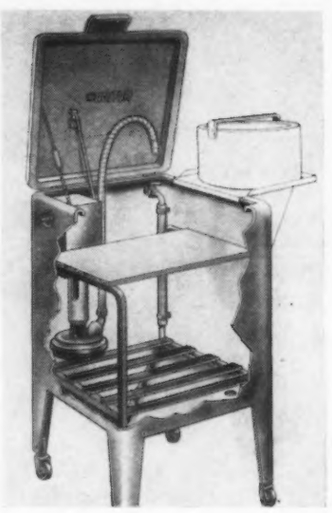
THE OD-1 cylindrical grinder-polisher is now available from *Hammond Machinery Builders, Inc.*, Kalamazoo, Mich., for wet or dry grinding and polishing of rods, bars and tubes from ⅛ to 1¼ in. diam. The unit is described as a centerless machine using coated abrasive belts for grinding and polishing. For stock removal, it is claimed to remove up to 0.005 in. per pass on ferrous metals and up to 0.010 in. on nonferrous. Work supports are designed to handle ½-in. bars up to 18 ft long and 1-in. bars up to 8 ft long. Accuracy is said to be 0.001 in. on production work. The endless abrasive belt is 4 in. wide, 60 in. long and may be operated dry or wet with coolant. Wet operation is said to give a better finish, not to discolor work from heat and to increase production and belt life. Through-feed and in-feed are the methods of feeding employed.

Template Setups

STRIP templates for mounting Wales hole punching and notching units in press brakes have been announced by the *Wales-Strippit Corp.*, North Tonawanda, N. Y. In this method of mounting Type BL and CJ hole punching units and Type N notching units in press brakes, the Strip template equipped with a T slot fits into a Wales press brake rail. The rail remains in the press brake when setups are changed and the templates are lifted out of the rail. Setups of Wales units on templates are made outside the press and are placed in the press brake rail and bolted to the T slot. The same hole punching and notching units may be used in other combination hole punching and notching templates.

Parts Cleaning Unit

MODEL H-83 has been added to the line of Agitor cold parts cleaning systems manufactured by



Gray-Mills Corp., Evanston, Ill. The unit has a solvent capacity of 24 gal and measures 21 in. sq with an overall height of 34 in. Air-agitation and high volume are features of this model which is designed for use in machine shops, maintenance and service departments for cleaning tools, dies and fabricated metal parts. The unit uses a cold solvent. An improved high volume centrifugal pumping unit is provided for flushing out recesses and removing softened grease, or for brush-cleaning parts under flowing solvent. A work shelf to accommodate parts slides out of the way to make the entire tank area available for soaking larger parts under air agitation. A safety device incorporates a fuseable fire-link which melts at 165°.

Stiffness Tester

A MOTOR-DRIVEN stiffness tester, designed for rapid, consistent and accurate tests on

light metals, foil, plastics, hard rubber, fiber products and other thin flexible sheet materials, has been developed by *W. & L. E. Gurley*, Troy, N. Y. The tester has a balanced pointer which pivots and moves parallel to a sine scale mounted on the base. It is loaded below the center with weights of 5, 25, 50 or 200 g, fastened 1, 2 or 4 in. from the pivots. The arm carrying the sample being tested is moved by small-geared synchronous motor which is controlled by a reversing switch on the base. To make a test a sample clamped in a movable clamp so that the free end overlaps the top of the pointer by ¼ in. is pressed against the top of the pointer until it is bent sufficiently to assume a short arc, shortening it by ¼ in. overlap. The pointer is then automatically released. The greatest reading of the pointer against the sine scale is averaged in both directions, to eliminate effects of curl, and may be multiplied by a factor applying to one of 144 combinations of sample and loading weight. The product is expressed as the stiffness of the sample. It is said that finishings or plasticizers can also be precisely measured and evaluated with the instrument.

Circulator Pumps

MODEL 1-B Rumaco pump released by the *Ruthman Machinery Co.*, 1809 Reading Rd., Cincinnati 2, has been designed for installation in industrial hot water heating systems as a booster

or circulating pump for operation vertically, horizontally or at intermediate angles. The unit is provided with machined opposing inlet and outlet flanges for attachment to 125-lb standard 2-in. pipe flanges. This ¼-hp motor unit is said to be suitable for installations pumping water or oils up to 200 ssu viscosity. This pump is available with ½-hp motor for other than ordinary water circulation where the fluids range between 200 and 600 ssu viscosity at operating temperatures. Model C pumps are designed on centrifugal principles, preferably to be operated vertically, flange mounted to reservoir so that the inlet is primed by gravity. They can be converted to pipe inlet type by use of pipe adapter plates. Liquids up to 250 ssu viscosity can be handled within the rated horsepower at only slightly decreased capacities for water at 68°F.

Anti-Sparking Equipment

A SAFETY control for electrostatic spray coating and dipdetearing processes, announced by *Harper J. Ransburg Co.*, 1234 Barth Ave., Indianapolis 7, is an electronic spark-guard so sensitive, it is claimed, that it can be set to anticipate an accidental short and de-energize the electrostatic field before a spark-over develops. The device will automatically stop the equipment should a piece accidentally approach the discharge electrode, either from swinging, from falling, or from some other dislocation. The spark-guard consists essentially of a selfcontained control cabinet, power pack and electronic relays arranged to de-energize the electrostatic field when accidental dislocation of a part reduces spark-over distance in the process below safe limits. The device also activates a bell and lamp to signal the operator and can be wired to stop the conveyer or other equipment as desired.

AC Enclosed Motor

DESIGNATED type T, the Micromotor 4-pole shaded pole motor built in sizes from 1/25 to 1/100 hp, has been announced by *Redmond Co., Inc.*, Owosso, Mich. The motor has a 3-piece diecast frame with a steel outer shell enclosing the air-stream cooling system. Rotor slots are copper filled flush with surfaces which is machined and rust-inhibited. Windings are resistant to oil and atmospheric conditions. Porous bronze bearings retard gumming

by filtering the lubricant and each bearing is spring-tension centered. Positive oil return is accomplished by special oil slingers and oil retainers. A rigid base is provided by multiple curvatures formed in heavy gage pressed steel. The motor is cradled in live rubber cushions.

Pressure Control Pilot

AN all-purpose pressure control pilot for use with diaphragm regulating valves has been announced by *Leslie Co.*, 130 Delafield Ave., Lyndhurst, N. J. The control pilot is a simple and positive mechanical device used to control the action of a diaphragm regulating valve so as to maintain

a constant controlled pressure and regulates operating pressure to a standard diaphragm regulating valve in the flow line of the fluid to be controlled. The pilot is said to be rugged and reliable, requiring no attention over long operating periods and no recalibration during service. They are made in 9 controlled pressure ranges from ½ to 800 psi.

Fractional HP Motor

WEIGHT reduction of approximately 50 pct through simplified design and the use of high-tensile strength alloys is claimed for a motor available in ¼, 1/3, ½ and ¾ hp which is manufactured by *Electra-Motors, Inc.*, 1110 N. Lemon St., Anaheim, Calif. This motor is of the continuous duty, drip-proof type, 3 phase, 60 cycle and 220/440 v. Bearings are double-sealed and lubricated for life. Shaft end-play is said to be restricted to a minimum and both stator and rotor cores are accessible. TempTrol design provides positive ventilation for this motor which can be operated in a vertical or horizontal position. The load-bearing frame is one-piece to provide for precision bearing alignment.

Plastic Dip Coating

AVAILABILITY of Plastic-Seal, a plastic dip coating derived from the basic formula of Ethyl cellulose components, has been announced by *Globe Imperial Corp.*, 2025 Kishwaukee St., Rockford, Ill. This refined formula, has been developed to protect vital surfaces against corrosion, rust, and physical damage. Principal advantages are listed as: Controlled variable thickness of the coating from 0.045 to 0.064 in.; controlled transparency of coating; and the use of red, green, and blue colors, in addition to the water clear coating. The coating is applied by dipping the object in molten Plastic-Seal, ranging in temperature from 350° to 370°F. Upon removal from the dip, the mass of the object absorbs the heat leaving a smooth, tough, pliable transparent coating, it is said. This facilitates handling, storing and identification.

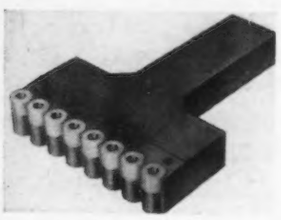
Silver Solder

AVAILABILITY of a silver solder said to have high capillary action, exceptional tensile strength, and good appearance after brazing has been announced by *All-State Welding Alloys Co., Inc.*, 96 W. Post Rd., White Plains, N. Y.

This alloy, having 20 pct silver content, has a melting temperature of 1430°F and a shear strength of 145,000 psi. It is suitable for brazing carbide tips to steel shanks and for fabrication of light steel parts and also recommended for use on steel, brass, copper, stainless steel and Inconel. Known as No. 120 high-strength silver solder, it is available in wire, strip, or rings.

Roughing Roll-Turner

IT is reported that a roughing roll-turner tool developed by *Kennametal, Inc.*, Latrobe, Pa., is speeding production and redressing of chilled cast iron rolls of any Schleroscope hardness rating. This tool comprises a series of replaceable sharp-edged solid Kennametal cemented carbide disks secured to a shank with countersunk cap screws, and backed by a hardened steel plate. The first cut with it



turns a series of circular grooves with rough humps, leaving a scalloped surface which is smoothed out with a block type finishing tool. Operating advantages of this tool are said to include easier cutting through scale, faster roll-turning speeds and removal of more metal per cut. In sharpening the disks only the tops need be smoothed up and disks are replaceable. The turners are available in 4, 6, 8 and 10-in. widths.

Cable Terminals

SOCKETYPE cable terminals now being made by *Macwhyte Co.*, Kenosha, Wis., consist of an alloy steel cadmium plated eye or fork type fitting, plus a stainless steel sleeve for swaging to cable. They are available loose or attached to the rope in a complete cable assembly, to specification length.

Automatic Wrench

AN automatic wrench, consisting of a variable torque motor operating a retractable spindle, is announced by *Fen Machine Co.*, 1350 Babbitt Rd., Euclid, Ohio. The wrench is available in two models with maximum torque capacity of 4000 and 6000 in.-lb. A selector wheel on the side of the housing enables the operator to select and hold any desired torque from zero to the maximum capacity of the unit. This regulates the gripping pressure, allowing a light pressure for thin walled pieces and a heavy grip for heavier work. A positive action brake applies to either direction of motor operation, preventing overrun. Model 4M is recommended for use with chucks up to 12-in. diam; model 6M, for use with chucks 15 to 30 in. diam. Motors are 220 or 440 v, 60 cycles, 3 phase.

Dynamometer Scales

A PORTABLE dynamometer scale which fits crane or hoist hooks and shows load weights instantly, thus eliminating double handling, has been announced by the *W. C. Dillon & Co., Inc.*, 5410 W. Harrison St., Chicago 44. Dials are scaled in pounds with capacity range models available from 0-500 to 20,000 lb.

Sound-Proofing Material

A METAL pan acoustical unit for use in buildings requiring a permanently incombustible noise quieting and acoustical treatment is now marketed by the *Armstrong Cork Co.*, Lancaster, Pa. Called Arrestone, the unit is a perforated metal pan containing a flameproof paper-wrapped mineral wool sound-absorbing pad which is held away from the perforated surface with a metal grid to allow the entire surface of the pad to absorb noise. Pans are 12 x 1¼ in. with a 5/32-in. bevel on all face edges. Noise resisting coefficient is said to be 0.85 and the sound absorbing efficiency is as high as 0.99. The metal pans snap onto rigid steel T runners and can be removed and remounted. Arrestone weighs 2 lb per sq ft, making it suitable for suspended installation to conceal piping, air conditioning ducts and lighting fixtures.

Anti-rust Paint

NOW available in aluminum as well as black anti-rust paint which can be applied over rust without brushing or scraping has been announced by *Speco, Inc.*, 3142 Superior Ave., Cleveland. Known as Rustrem the paint is reputed to immediately penetrate the rust layer, rendering it inactive and sealing the surface against further rusting. Other features claimed are high resistance to chemical action and immunity to climatic changes. It is recommended for use under water, in salt water, or in locations where dampness and moisture are present. Rustrem aluminum can be painted over with any high quality paint or enamel.

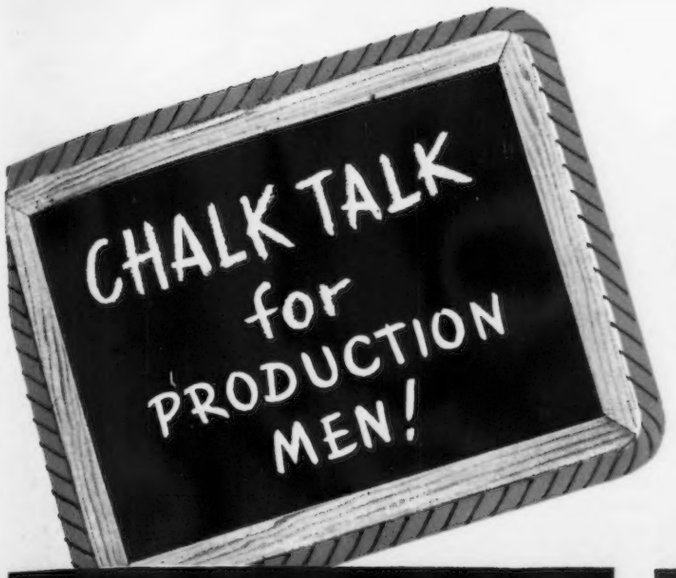
Marking Machine

OPERATING on the gravity feed principle, a marking machine, called the Florline, has been developed by *H. C. Sweet Co.*, 3923 Fenkell Ave., Detroit, for making safety and parking lines at a walking speed. Automatically

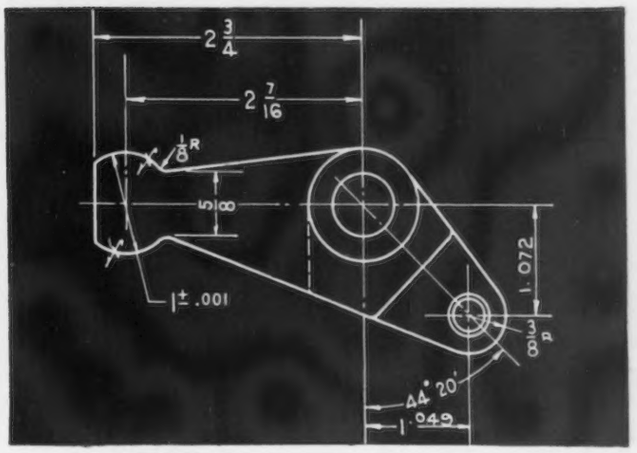
correct handle height and pistol-grip trigger operation makes it easy for one operator using one hand to guide and control the Florline. Paint flow is adjustable. The machine holds 1½ gal of paint, lacquer or whitewash. Lines, straight or curved, 2, 3 or 4 in. in width, can be made with the device.

Aluminum Nails

A LINE of aluminum nails and staples has been made available by *Nichols Wire & Steel Co.*, Davenport, Iowa. The nails are said to have great holding power because in their manufacture the complete nail surface is etched to remove all traces of grease and oil. There is no protective coating that can be knocked off the head by hammer blows. They cannot rust or oxidize. Common aluminum nails are available in sizes 3d to 40d. Aluminum staples are available in 9 gage, 1 and 1¼-in. sizes. They can be used for the same applications, it is said, in the same types and sizes, in which steel nails and staples are used.

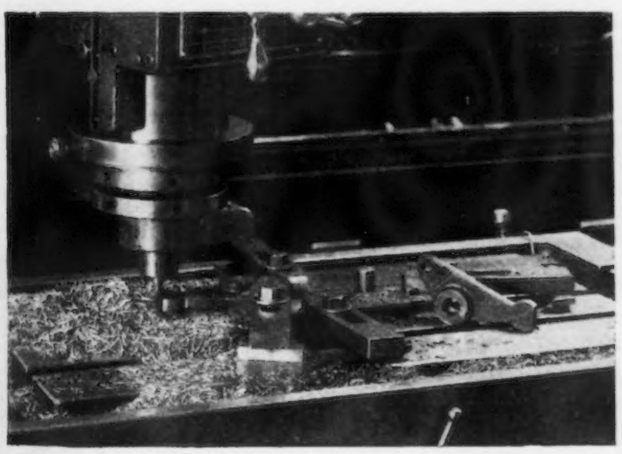


Cut Milling Time on this small part from 3¼ Minutes to 30 Seconds



1 **FAST!** The 1" dia. on the cam end of these malleable iron shifter levers was completely milled (ruff & finish) in 30 sec. each, floor to floor. Initial set-up took only 20 min. Old method of form milling took 3¼ min. Time saved is typical of Model 2D Rotary Head Milling Machine performance.

2 **DIRECT!** The simple radius of the cam end of the shifter lever was milled direct. A small end mill was the only tool used. Blueprint was the only guide operator had or needed. Precise mechanical control of the cutter in all angular and radial movements, a unique feature of the machine, did the rest.



3 **ACCURATE!** The single, simple set-up held chance for error to minimum. The built-in precision control and measuring devices for all combinations of cutting movements, angular and radial in both horizontal and vertical planes guaranteed uniform, accurate results.

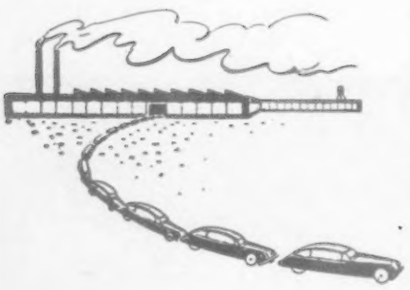
4 For more facts on how you can get FAST, DIRECT, ACCURATE results on other contour milling jobs, or on tool and die work, using the Kearney & Trecker Rotary Head Method, write for bulletin 1002C on the Model 2D Rotary Head Milling Machine.

KEARNEY & TRECKER CORPORATION
MILWAUKEE 14, WISCONSIN 4719

Assembly Line . . .

WALTER G. PATTON

• Ford's new pension plan for its hourly workers may be voted down . . . Car buyer tells how a dealer gave him the "run-around".



DETROIT—The much ballyhooed Ford pension plan may not materialize after all.

Under the terms of an agreement signed just one minute before the Taft-Hartley bill became effective, the company and the union agreed that two proposals will be submitted to the Ford workers: (1) A pension plan plus a 7¢ an hr wage increase and (2) a 15¢ an hr pay raise of which 11½¢ is to be applied to wage rates and the remainder to six paid holidays. The contract is for 2 years.

The dispute over a 20 min paid lunch period for Ford workers will be submitted to the impartial umpire for decision. Curiously enough, it was the controversy over the lunch period agreement that held up the agreement until the last possible moment.

According to observers here, the prolonged haggling over the terms of the Ford contract represents a strange mixture of indecision and union politics. On June 27, Richard T. Leonard, international representative of Ford UAW-CIO announced publicly that general agreement on a new contract, including a pension plan, had been reached. He is reported as having said that he was "completely satisfied" with the plan. The impression was given that only minor details in the contract remained to be worked out.

According to a Ford spokesman, on Aug. 15, after more than 6 additional weeks of negotiation, Mr. Leonard announced that all details of the pension plan had been agreed upon. Mr. Leonard is then quoted as saying that only minor matters of language remained to be resolved. Nevertheless, agreement was not reached until 11:59 p.m. on Aug. 21—or 6 days later.

Ratification of the new agreement is still required under the union charter. Most observers here are predicting that, given the free choice of the pension plan plus a 7¢ raise and a straight 15¢ raise, Ford workers will undoubtedly choose the 15¢ raise. From the standpoint of *immediate* benefits to the worker, the 15¢ raise will probably represent a little more to the worker. It will also represent a much smaller immediate cash outlay by Ford which would have had to pony up enough money to pension within a few months nearly 8000 Ford workers who are immediately eligible for retirement under the present pension plan.

WHAT the issue boils down to seems to be this: When the worker is given a choice of the few more immediate dollars and a pension plan to provide for his old age would he rather have the dollar *now*. Of course, it may be that the workers are thinking that they can get the pension plan later so they may as well take the 15¢ wage raise now.

If the contract had not been signed before the Taft-Hartley bill became effective the union would have had to vote for a union shop in an election conducted by the National Relations Board. Since the union has sworn to have nothing to do with NLRB this presented a real problem.

In addition to the alternative of a 15¢ wage raise or a pension plan, the union also won from Ford a guarantee of immunity from wildcat damage suits under the Taft-Hartley bill. Present negotiations began May 5.

The Ford pension plan offer has already been rejected by the National Ford Council which turned it down by a vote of 524 to 472. Reason given for th negative vote was that the pension plan was "inadequate."

Charges and countercharges by the company and the union flew thick and fast during the final negotiations. Ford charged that the UAW negotiating committee was split by dissension over the pension plan demands. Mr. Leonard countered by charging that Mr. Bugas had been unable "to sell the upper bracket Ford officials his original pension plan proposal" and that the company had "reneged" on its original offer.

The automobile industry could easily understand a comment credited to John S. Bugas, Ford vice-president and director of industrial relations. "It was a rough, tough bargaining session and I'm glad it's over. No one would say, however, whether Ford would be pleased or displeased if the company got "off the hook" on its pension plan offer.

A READER takes issue with the column appearing in the June 19 issue of THE IRON AGE, p. 88. The feature called attention to some of the sharp practices resorted to by purchasers of new automobiles. Among other things, we were told that the reader could "see a broad defense of dealers in this article."

To get the record straight, it should be said that THE IRON AGE is not interested in defending either auto dealers or auto manufacturers. It is interested in bringing out facts about both dealers and manufacturers that seem pertinent. For this reason, the letter is quoted here almost in its entirety, with the writer's name deleted as requested. THE IRON AGE will be glad to furnish the name of the writer of this letter to any automobile manufacturer who may be interested.

"I cite a case in point *against* the so-called dealers and the protection offered them by the parent companies: In March, 1946, I went

Big NEWS for you at

A·H·Q*

IN CHICAGO AT THE DODGE-CHICAGO PLANT

To earn profits in the face of high labor and material costs, Industry must turn to Accuracy as never before. At the Machine Tool Show, manufacturers will see Accuracy at work — especially at A.H.Q. (*Accuracy Headquarters) — the P&W Booth, that is. There'll be big news — accuracy news — news you won't miss . . . for the 6,000 sq. ft. P&W Booth will be one of the biggest at the Show. Here are just a few hints of the news for you at A.H.Q. . . .

Booth No. 55 in the *northeast* corner

1 ***Precision Machine Tools.*** Jig Borers, Lathes, Vertical Shapers, Thread Millers, Surface Grinders, Gear Grinders . . . for effective precision manufacturing and toolroom production . . . they'll all be working at A.H.Q.

2 ***Die Sinking and Mold Exhibit.*** The newest P&W Die Sinkers and Keller Tracer-Controlled Machines in action on a full range of work from small cavities up to large automotive dies.

3 ***Kellerflex Flexible Shaft Machines.*** Including the full range of attachments and accessories . . . plus a "try it yourself" demonstration of the amazing cutting ability of the new Keller Carbide Burs.

4 ***Small Tools.*** You'll see a complete showing of P&W taps, dies, reamers and milling cutters at A.H.Q., plus some interesting carbide tool developments.

5 ***Precision Gaging Equipment.*** Everyone knows the basic accuracy of the many P&W Conventional Type Gages . . . of P&W's Electrolimit and Air-O-Limit Comparators. The gage news at A.H.Q. will be new ways to engineer them into gaging systems for quality control and selective assembly.

6 ***New Literature.*** Fully descriptive Pratt & Whitney literature will be available at A.H.Q. But you won't need to lug it. Just register for the pieces you want, and it will be sent to you, promptly.

7 ***The Experts Will Be There.*** You'll meet the men who engineer accuracy into P&W machines, tools and gages . . . at A.H.Q. They'll be on hand to help you on the solution of your problems. Come early and often to see them . . . you'll find a comfortable chair and a warm welcome at A.H.Q.

PRATT & WHITNEY

Division Niles-Bement-Pond Company

WEST HARTFORD 1, CONNECTICUT

Accuracy Headquarters

MACHINE TOOL SHOW CHICAGO SEPT. 17-26

to a dealer and inquired about price, delivery, etc. The information given by the salesman seemed to be reasonable. Delivery guaranteed on or about July 1, 1946. My old car to be accepted in trade upon delivery of the new one at the OPA ceiling price in effect at the time of delivery. The price complete, $1486. July stretched to late August and no delivery. A price rise was granted by the OPA in the interim of $86. Upon inquiry of when delivery would be made, I was given the merry run-a-round. When I asked about the price, it was $100 above the $86 increase granted. Take it or leave it.

"The turn-in value of the car was now $750 for a 1941 Sedan, $300 below the ceiling. No information given as to why the other $100. Finally in disgust the order was cancelled and the deposit returned.

"WITH the acceptance of the cancellation, the president of the company was "sorry" he had not been able to discuss the matter with me personally (he was never available while the order was on his books), he explained in detail that now the simonizing, seat covers, back-up lights, fog lights, (none of which were wanted) had been added to the list of things now furnished. Take them or no car.

"I finally found the manufacturers representative who said that since I had cancelled the order there were nothing he could do. I should have let it remain on the books.

"You say the manufacturers want to clear up the mess. Why don't they honestly check their dealers for sharp practices and prohibit these things? Why don't they take the time to audit the dealer's orders and ascertain those who would buy legitimately? *Why don't they see that cars are delivered to the* right people?

"A few years hence they are the ones who will suffer. People are not going to be so ready to buy their products unless they clean up their dealers first and now. Personally, I will rather take trains and walk than patronize any dealer in this area. I believe I still have the letter from the dealer which explains his pricing. If you should want a copy I will be glad to look for it but only if you will see that the right people see it."

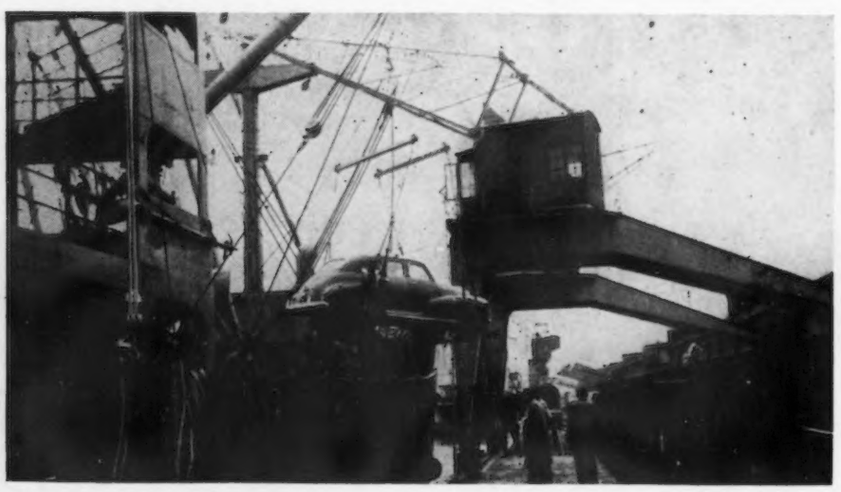
Wayne Will Give Week's Lecture in Handling

Detroit

• • • **With the assistance** of the Industrial Packaging Engineers Assn., Wayne University School of Business Administration has outlined a series of lectures by prominent packing and material handling authorities. A one week institute on packing and material handling techniques will be held Sept. 29 through Oct. 3 at the Rackham Memorial Building, Detroit.

An advisory council of representatives includes: H. O. Horning, Chrysler Corp.; P. S. Strout, Crowley Milner & Co.; Charles E. Boyd, Retail Merchants Assn., Detroit Board of Commerce; I. E. Thomas, Ford Motor Co.; G. E. Whiteford, Ford Motor Co.; John C. Downs, Ford Motor Co.; Paul O. Vogt, General Electric Co.; Ralph A. O'Reilly, Jr., General Motors Corp.; S. Eugene Cartright, Chevrolet Div., General Motors Corp.; R. F. Weber, International Harvester Co.; J. J. Cairns, The Great Atlantic & Pacific Co.; R. B. Hiltz, The Hinde & Dauch Paper Co.; R. G. Brown, J. L. Hudson Co.; George H. Lloyd, J. L. Hudson Co.; J. C. Witte, Montgomery Ward & Co.; John E. Sweitzer, Parke, Davis & Co.; and H. B. Geary, Sears Roebuck & Co.

CARS FOR EUROPE: *At Bremerhaven, Germany, American automobiles are transferred from ship to flatcars by German workers at the Army Exchange Service distribution point there. This point handles an average of 10,000 gross tons of goods a month for transhipment throughout the occupied areas.*



United Engineering & Foundry Doubles Net

Youngstown

• • • **United Engineering** & Foundry Co. more than doubled its business in the first half of 1947 compared with the same period of 1946, the company reported.

Net income for the first half of this year was $1,411,006, equal to $1.69 per share on 820,746 common shares outstanding, after allowance for preferred dividends. Net compares with $673,176 after a $570,000 carry-back of excess profits credits, equal to 79¢ a common share.

Net sales for the first half of 1947 were $18,320,426, compared with $8,710,818 in the corresponding period a year ago.

Car Registrations Tripled

Detroit

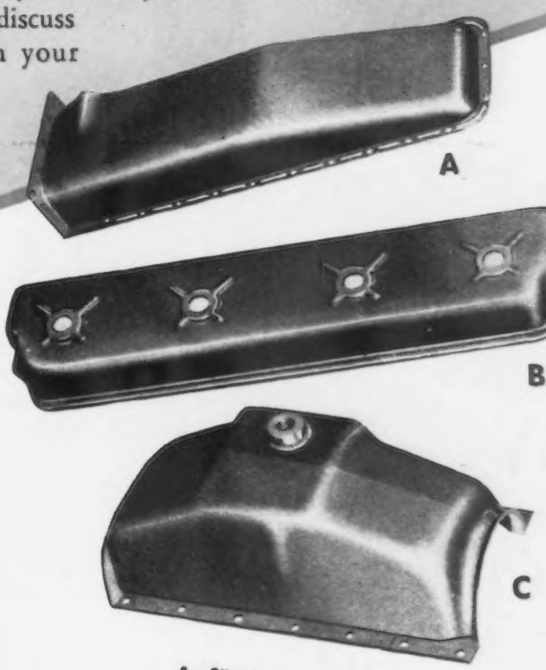
• • • **New passenger car** registrations during the first 6 months of 1947 were three times greater than the total for the first 6 months of 1946, according to R. L. Polk & Co. statisticians.

During the first half of 1947 a total of 1,534,918 new automobiles were registered, Polk said. Total for the first half of 1946 was 493,299. The month of June saw 269,863 new cars registered.

Polk predicted that new truck registrations during the first half of the year will approximate 436,000 units.

Three Ways to Save

STEEL STAMPINGS, properly designed and accurately produced, afford substantial savings in three ways—savings in material, machining and assembly costs. You can count on these economies, in full, with T & W parts. Transue's design experience covers years of repeated service to many of the nation's largest stamping buyers . . . assuring every advantage and refinement in part design. Transue's extensive, modern facilities represent unsurpassed ability to produce your parts with uniformity and ready-to-assemble finish. Why not call in a Transue specialist to discuss the possibilities for new economies in your operations?



A—OIL PAN FOR MARINE ENGINE—33-1/8" long, 11" wide, 4-3/4" deep.
B—CYLINDER HEAD COVER FOR TRACTOR ENGINE—27-5/8" long, 6-5/8" wide, 3" deep.
C—PAN FOR 4-CYLINDER DIESEL—19-25/32" long, 10-7/8" wide, 7" deep.

Designers and Makers of Deep Drawn Stampings

TRANSUE & WILLIAMS
ALLIANCE, OHIO

SALES OFFICES: NEW YORK, PHILADELPHIA, CHICAGO, DETROIT, INDIANAPOLIS, CLEVELAND

Washington . . . EUGENE J. HARDY

• Democrats shaping 1948 campaign strategy on price and monopoly issues . . . Politicos likely to build good case for Truman . . . TNEC theories brought out . . . New Deal pattern evident.

WASHINGTON — President Truman's political advisers have finally revealed one of their major points of strategy for their campaign to keep the Missourian in the White House until 1952. Strictly a defensive program, they have little to offer other than advocacy of a return to the philosophy of government which calls for direction of the economic forces of the nation by the executive—a theory fostered and nurtured by the disciples of the New Deal.

While Mr. Truman cannot be described as an ardent New Dealer by any stretch of the imagination, president-makers in either of the major parties stop at nothing in a political battle.

The focal point of the attack on Republican policies will be high prices—without question an issue that will arouse public interest—coupled with continued sallies against the alleged monopolies that are keeping prices high. A strong advocate of price control in the OPA days, Mr. Truman could attract considerable public support on this issue, provided the Republicans are kind enough to forget the President's encouragement to the drives of organized labor for higher wages and his refusal to cut government expenditures.

The signs have been somewhat obscured over the past few months, but a piecing together of significant statements and events reveals a very definite pattern. For example, the President's repeated laudation of the work of the old Temporary National Economic Committee—a leading advocate of the New Deal theory that business never had or never will have enough sense to keep its house in order. Further investigation of the work of the TNEC and activation of many of its recommendations have been emphasized by the President on several occasions.

ON Capitol Hill, several New Deal Senators hope to revive the old TNEC through the Joint Congressional Economic Committee, thus providing an effective sounding board for the big campaign issue—high prices and monopolies.

The first part of this effort fizzled. These Senators succeeded in forcing the opening of hearings on the price situation before the joint committee in the weeks before congressional adjournment. However, the performance of two of the leading exponents of the TNEC philosophy, those prophets of economic doom, former Price Administrators Leon Henderson and Chester Bowles, was something less than sensational when they appeared before the committee.

Leading exponents of this theory on the Hill are Democratic Senators Pepper and O'Mahoney. Senator O'Mahoney, chairman of the old TNEC, as well as a member of the Joint Committee which will hold hearings on the price situation during the recess, has consistently backed the President's antimonopoly crusade with legislative support. Recently, the Wyoming Senator, in a clear exposition of TNEC philosophy was quoted as saying that Congress must decide whether to encourage "an intelligent program of stimulating production" or to permit the continuance of "private rationing" of steel, petroleum, automobiles and other commodities.

Senator O'Mahoney also urged the enactment of another TNEC recommendation—a national standards law which would require every corporation to comply with definite standards of social and economic responsibility.

REPUBLICAN leaders admit that the issue of high prices will be hard to talk down during an election year and will attract public support, while the monopoly issue will attract labor support which has already begun the trek back to Mr. Truman as a result of his veto of the Taft-Hartley Act. The President can consistently point to his record on prices and monopolies without fear of major contradiction.

While seasoned observers have sensed for some time the fact that high prices and monopolies would be major campaign issues next year, only recently did the strategy become more obvious.

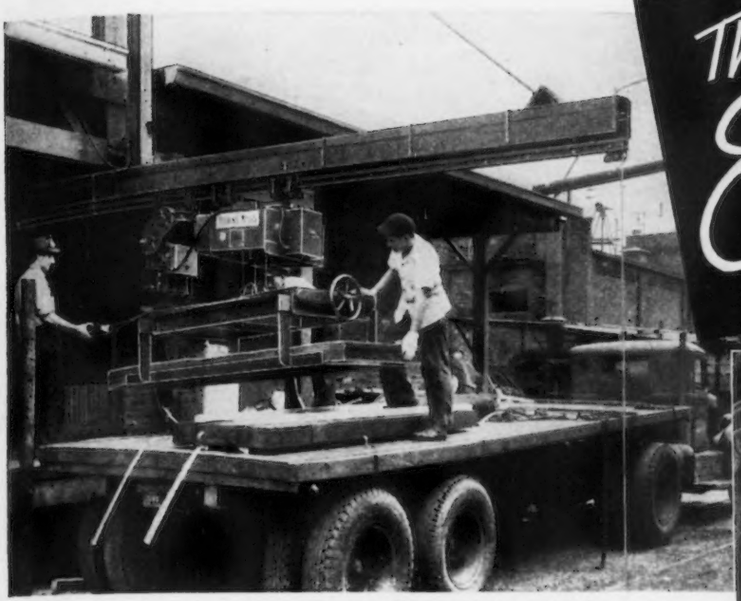
The first shot was Attorney General Tom Clark's statement that "the antitrust laws in the United States carry a jail sentence of one year, besides heavy fines, and from now on we shall insist upon both against those who would violate these laws and attempt to destroy our free enterprise system." If justice does ask for jail sentences in the rash of antitrust cases that have broken out in recent weeks it will be a definite departure from past policy.

Mr. Clark's new policy was first aimed at alleged conspiracies to maintain or increase present prices of food, clothing and housing. The time-consuming antitrust routine should turn up offenders just in time for the big election campaign, that is, if any are found. In any case, regardless of future actions, justice with its big publicity blurbs on antitrust cases is helping the democratic high command immensely.

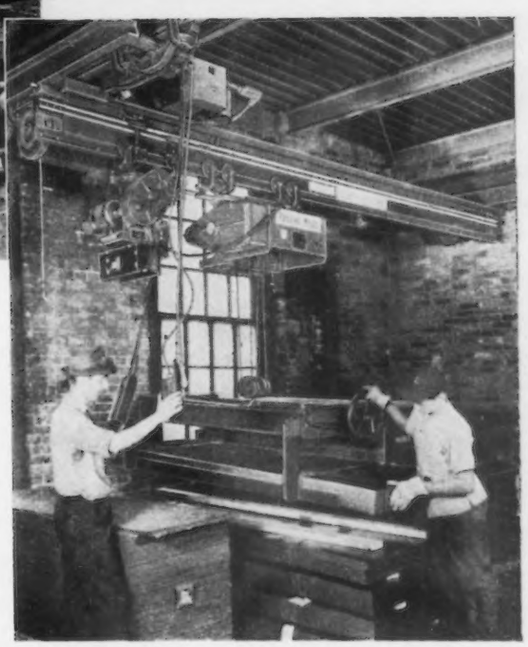
ANOTHER part of the pattern was the CIO price statement issued almost simultaneously with Mr. Clark's. In this the CIO demanded a special session of Cong-

HANDLING STEEL

The Easy Way!

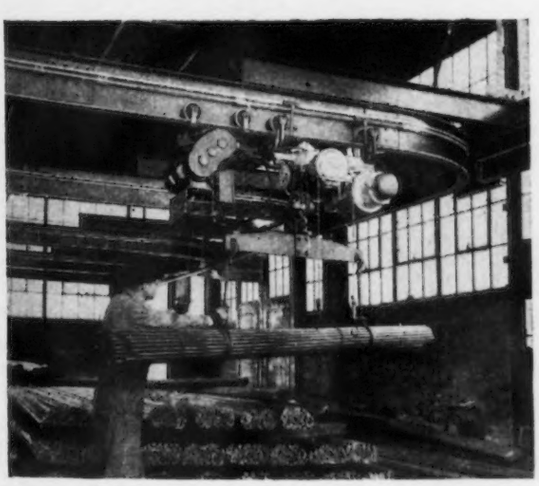


Power operated unit unloads steel by pushbutton control



Electric hoist with special hook, handles coils to process.

Power crane accurately spots 2-ton loads.



MonoTractor and 3-Ton hoist moves bar stock.

This tough job is made easy from start to finish —unloading stock from truck, to storage, to machines, to shipping—American MonoRail Systems, to fit any budget, afford faster handling, accurate spotting, reduced fatigue, added safety and greatly reduced damage.

American MonoRail Equipment saves one company $20 on every truck unloaded; another saved $150 in the first four months. With thousands of installations to draw from, American MonoRail Engineers are well qualified to offer solutions involving overhead handling equipment. This service is offered without obligation.

THE AMERICAN MONORAIL COMPANY

ress to reinstate price controls and warned of a new round of wage demands unless prices begin to drop.

Obviously, the CIO does not expect Congress to restore price controls, but here again another campaign weapon has been forged. All of this is indicative of continued labor support for Mr. Truman.

Other links in this political chain, in addition to the numerous antitrust suits and threats of more to come, are: The President's plea to the steel industry to refrain from raising prices as a result of the coal wage agreement; FTC's picking up the TNEC ball on multiple basing points after a lapse of several years; the President's reluctance to call a joint labor-management conference on the price issue; Henry Kaiser's confidence that the alleged steel monopoly will be smoked out coupled with his attempt to snowball the Fontana steel plant deal into a major political issue in the West; and the multitude of studies claiming that the steel industry is forcing a depression by balking at increasing basic capacity.

More specifically, the President has been storing ammunition for a campaign on the price and monopoly issue for many months, perhaps unwittingly, but nevertheless the results are clear.

A brief glance at some of the President's utterances since the first of the year bears out this contention: 1948 Budget message—The President in asking for increased appropriations for antitrust work said; "free enterprise depends on positive government action to preserve competition and control monopolies — proper functions that a democratic government must not neglect."

This is an objective with which little disagreement can be found, but later statements began to reveal the New Deal sentiments inserted in the President's remarks by his advisers.

ON Jan. 6, in his State of the Union message, after warning against the evils of high prices, the President stated: "In 1941 the Temporary National Economic Committee completed a comprehensive investigation into the workings of the national economy. The Committee's study showed that, despite half a century of antitrust law enforcement, one of the gravest threats to our welfare lay in the increasing concentration of power in the hands of a small number of giant organizations.

"To strengthen and enforce the laws that regulate business practices is not enough. Enforcement must be supplemented by positive measures of aid to new enterprises."

This opening shot was followed up 2 days later by Mr. Truman in his first economic report to the Congress which stated: "It is imperative that there be no restrictions on free competition resulting in curtailment of production and employment, or in maintenance or in interference with freedom to invest funds, or in hampering the entry of new firms to any line of production or trade. I recommend that the Congress review the studies of the Temporary National Economic Committee and by other Congressional committees with a view toward supplementing or strengthening existing legislation in this field."

MORE recently, the President in his midyear Economic Report to Congress, on July 21, again warned of the disastrous effects of continued high prices. He also stated that "claims made by the advocates of early decontrol, that OPA prices had retarded production and that it would promptly catch up with demand after the removal of the controls, were not fully borne out by developments. Production, with important exceptions, did not increase as rapidly in the first few months after decontrol as in the last few months before decontrol."

The effect on production of such things as labor strife and foreign aid programs is ignored. Mr. Truman might also have difficulty explaining his approval of agricultural price support measures which unquestionably are not helping to bring down prices of food or clothing.

While no direct mention of the TNEC and its many recommendations is made in this midyear report, the President points out that such long-range programs are also necessary and that the "first Economic Report indicated the range of these programs, and studies are now under way to make them ready for presentation by *next year*."

The Republican reply to this strategy should be interesting.

THE BULL OF THE WOODS — BY J. R. WILLIAMS

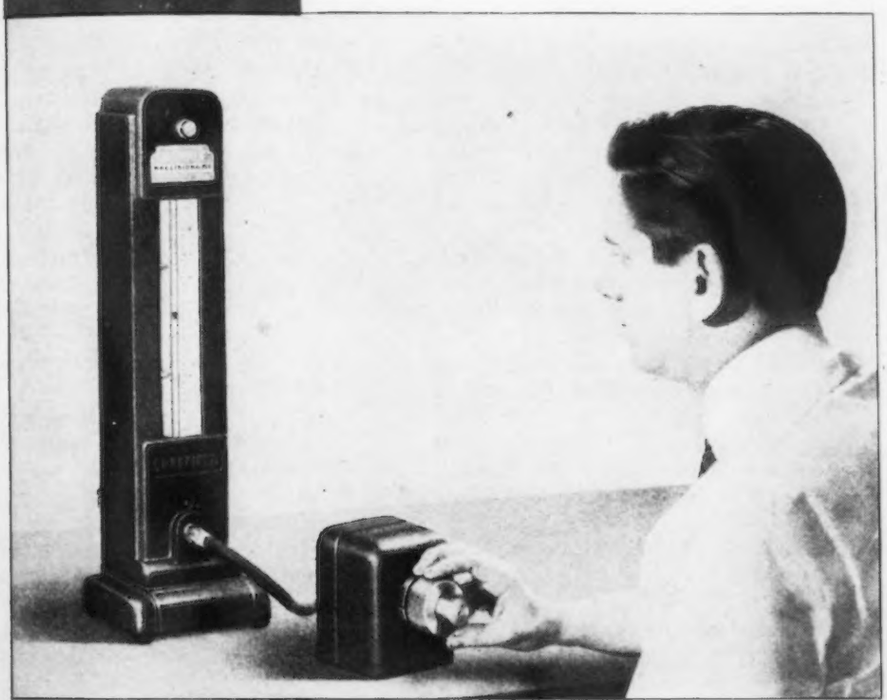
The Backbone of Cost Saving Dimensional Control

If you are manufacturing mechanical elements, close dimensional control will save you assembly time because accurately sized parts fit together quickly. Applied directly at the machine, proper gages save you scrap losses and much machine time. When all the elements of a mechanical assembly are held accurately within tolerance, that assembly gives superior performance in service.

Around Sheffield instruments and gages have been developed some of the most effective dimensional quality control policies in the manufacturing field. Let us send you descriptive literature on cost saving equipment—it may lead to solving your inspection problems.

THE PRECISIONAIRE is a flow type air gage for measuring true and average diameter, bellmouth, out-of-round for through and blind holes—concentricity, squareness, straightness and parallelism—also many external dimensions. Write for catalog.

THE VISUAL GAGE is an indicating comparator set by means of precision gage blocks for checking external dimensions, the angularity of surfaces, the angularity between a bore and a surface, run-out, and the pitch diameter of screw threads. It is both a production and a tool room instrument. Write for catalog.



STANDARD GAGES

Sheffield can supply any type of standard or fixed size gage and a wide range of indicator gages for shop checking.

the *Sheffield* corporation

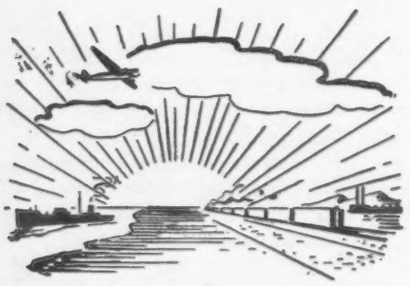
Dayton 1, Ohio Sheffield MEASURING PRECISION U. S. A.

Sheffield's principal products include Gages, Measuring Instruments, Machine Tools, Contract Services and Threading Tools. Standard Gages shipped within 24 hours.

West Coast . . .

ROBERT T. REINHARDT

• Power and energy requirements for industrialization of the West demand public attention . . . Natural resources of Utah face new taxes . . . Los Angeles parades its metal users.



SAN FRANCISCO—Western industry is power conscious to a greater extent than ever before. Dwindling gas and oil reserves in California and delay in development of additional hydroelectric power projects are giving concern to those interested in furthering the industrialization of the area.

Northern and central California face a curtailment of electric power delivery between Sept. 1 and at least Nov. 15 when overload power from Shasta Dam which has been available to the Pacific Gas & Electric Co. for peaking purposes is curtailed. This discontinuance of service of 30,000 kw of overload from Shasta Dam is necessary to permit construction of Keswick Dam, according to Richard L. Boke, regional director of the Bureau of Reclamation at Sacramento.

Mr. Boke has reported that the supply of power in this area was "at least 40,000 kw short of the demand," and that frequency of the area system dropped on July 29 from a normal 60 cycles per second to 59.7, which resulted among other things in putting electric clocks 27 sec behind. The Ames Laboratory at Sunnyvale was affected to the extent that delays in operating its wind tunnels occurred because the utility company could not serve it with power.

Unusually dry weather in California has also affected the development of power and according to the Pacific Gas & Electric Co., which distributes much of the hydroelectric power in this area, principal curtailments have been on contracts calling for surplus or reserve power. This company is engaged on an expansion program which, by the end of 1948 will increase output by approximately 400,000 kw in addition to 200,000 kw to be added to the capacity of the Bureau of Reclamation's Shasta Dam plant which together is estimated to equal approximately 50 pct of last year's record demand on the system.

In July and August the PG&E is reported as having informed the Bureau of Reclamation that capacity was inadequate to meet the load demand.

There is still considerable friction between the PG&E and the Bureau which began in February this year when Mr. Boke indicated a power shortage which was denied by the utility company.

Pointing out that the electric power supply situation would be on an emergency basis from now until Jan. 1, Mr. Boke said: "If the utility company is unable to meet its load between now and Christmas, either frequency will drop off again or large industrial plants will have to slow down their production. When that happens I don't want the Bureau held responsible simply because Shasta Dam wasn't putting out more than our PG&E contract calls for." He then added, "We must reduce our water release in order to work on Keswick, and we have waited until the end of the irrigation season to do it. This area is just scraping through by the skin of its teeth. The good luck has held so far, except for July 29—I hope it holds through Christmas."

J. R. MAHONEY, director, Bureau of Economics and Business, University of Utah, in addressing The Commonwealth Club here last week, strongly urged that increased public attention be given to further development of hydroelectric power in the West, which, he says, has a potential equal to half of that in the entire United States. He pointed out that our government has spent at least a billion dollars for reclamation projects during the past 45 years in the West and that now is the time to bring about additional hydroelectric power development and that the proponents of the plan to deter such large public works until a period of depression, were short sighted.

In urging additional power development, Mr. Mahoney stated that these should not be undertaken without serious and extensive study in order that the best interests of the West as a whole may be served without regard to state lines or area prejudices.

Mr. Mahoney, who carried on a militant fight for retention of the steel plant at Geneva, Utah, as a peace time private enterprise, cited as horrible examples of inadequate planning the construction of steel plants and blast furnaces at locations which later proved uneconomic.

He urged an extensive and detailed study of the rich resources of the West immediately as the basis for additional power development. As an example he pointed out that one half of all the known coal reserves are located in the West and that these reserves have a potential energy development 500 times as great as the known reserves of gas and oil.

Chances for an increase in the supply of natural gas for central and northern California were brighter as a result of an agreement between northern and southern gas companies last week through which approximately 100 million additional cubic feet of that fuel would be brought into this area daily.

THE new arrangement is predicated on completion of the pipe line from Texas to southern California which was projected for completion late in 1948 to bring approximately 305 million cu ft into California daily. California Public Utilities Commission has the agreement under consideration and the plan has the support of the PG&E, the Southern California Gas Co.

Lower Cost Per Thread...

With these two new MURCHEY die heads

Tangent Chaser Setting Fixture

Chasers for all Murchey tangent chaser die heads are precision set in the chaser holding blocks on this Universal Micrometer Setting Fixture. Its use insures accurate and equal setting and finer quality threads with minimum chaser wear.

These two new tangent chaser die heads will enable you to produce more threads quicker at lower costs.

Down time is reduced—and productivity increased by the new design. Dull chasers are quickly replaced with chasers and holding blocks previously set to exact location in a Murchey Chaser Setting Fixture.

Replacement of chasers and holding blocks is made without changing size adjustment—and usually without removing the tool from the machine.

One of these new Murchey Die Heads and extra sets of chasers and holding blocks will, therefore, do the job of two or more tools.

Chasers of any given pitch, together with proper chaser holding blocks, are used for any diameter of threaded part within the capacity of the die head. Chaser life is exceptionally long because in sharpening it is necessary to clean up only the cutting face. No further grinding is needed.

There are two die heads: the "TRB" for use on machines where the tool rotates, such as the automatic screw machine, drill press, etc., and the "TLB" for machines on which the tool remains stationary, such as the turret lathe and hand screw machine.

Ask your Murchey representative to show you these money-saving, time-saving tools.

MURCHEY MACHINE & TOOL CO.
Detroit 26, Mich.

Hope to see you at BOOTH 202

MURCHEY

DIVISION OF THE SHEFFIELD CORP.
DAYTON 1, OHIO, U.S.A.

Write for new Murchey catalog on Threading Tools.

and the Southern Counties Gas Co. Industrialists are reassured by this latest development and are looking forward to the delivery of the 100 million cu ft of additional gas per day, which exceeds by 2 years the earliest hope previously held for increased supply.

No additional pipe line will be needed for this supplemental supply.

In the Pacific Northwest the municipally owned power systems of Tacoma and Seattle, Wash., have begun to receive some power from the Columbia River System of the Bonneville Power Administration which supplements the supply from the two cities' generating plants.

This step is believed to be in the direction of conservation of power resources since there will be mutual use of storage space in the reservoirs of the two cities and the BPA. Contracts are to remain in force for 10 years with provisions that purchasers may increase contract demand if required or may reduce the demand if and when the two cities' systems had sufficient new generation in their own plant to handle their requirements.

During and after the war, population increases in the Pacific Northwest and the industrial growth there have increased power requirements to a point where they are now well in advance of the Tacoma and Seattle generation installation schedules on the Skagit and Cowlitz Rivers.

SALT LAKE CITY—A state severance tax on natural resources —which was generally presumed to be a sleeping dog, at least until the 1949 session of the Utah legislature —may be prodded into wakefulness before that time.

The Utah State Federation of Labor, at its recent convention, adopted a resolution directing officers and members to work with like-minded groups to place such a tax measure on the 1948 general election ballot.

Severance tax bills appear regularly in state legislative sessions, but sponsors have been unsuccessful in steering them through the committee and parliamentary pitfalls. The new move is predicated on the theory that the general public will be more responsive to the "foreign exploitation" propaganda line than the legislators have proved to be in the past.

Chief victims of such a tax would be the steel and nonferrous metal mining industries, and possibly coal, though sponsors have shown a disposition in the past to exempt coal. Severance tax advocates are willing to recognize that coal is up to, or past, the limit of costs it can bear and maintain a competitive position. But the same reasoning apparently does not apply to metal mining, although the industry in this state, with a few exceptions, is not in a thriving condition.

LOS ANGELES—Much has been written about the increased industrialization of southern California and the heavy demands for material being made by steel consuming industries. For the first time the Los Angeles Chamber of Commerce has prepared a comprehensive analysis of these metalworking industries and reports that there are now 36 groups consuming steel, ranging from agricultural implement production to wire products manufacturers. The complete list as just released shows the diversity of products manufactured here. By analyzing the size of each of these steel consumers on the basis of employees, it is possible to estimate the relative plant capacity of each.

Most of these 611 firms have increased plant capacity many fold since 1940 and others are entirely new ventures in this area.

Steel Consuming Industries in Los Angeles County Employing 25 or More Persons

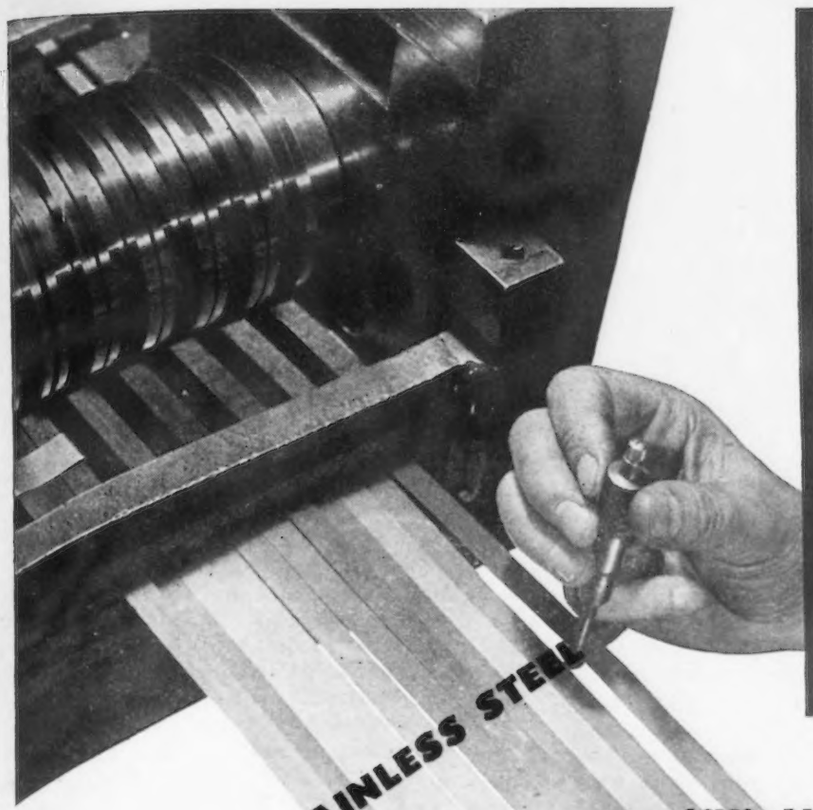
Products	Employees per Establishment					Total Firms
	25–50	51–100	101–250	251–500	501 and More	
Agricultural implements	8	....	4	2	....	14
Air conditioning equipment	6	6	5	2	....	19
Cans, tin	....	....	....	1	1	2
Car construction and repairing	....	....	1	....	1	2
Doors, sash, shutters	3	....	2	....	....	5
Electrical apparatus, machinery, etc.	16	21	12	5	6	60
Elevators and equipment	2	....	....	....	....	2
Engines	....	5	2	....	....	7
Fire extinguishers	....	2	....	....	....	2
Fireplace equipment	2	1	1	....	....	4
Hardware	5	6	4	....	....	15
Heating equipment	23	....	....	....	....	23
Irrigation equipment	5	....	....	....	....	5
Kitchen equipment	4	14	2	2	3	25
Machinery miscellaneous and other metal products	22	43	12	1	3	81
Machine shop products	71	18	8	....	....	97
Meters	....	2	....	1	....	3
Mining machinery	....	....	4	....	....	4
Motor vehicle bodies and parts	....	7	2	....	....	9
Oil well and Refinery equipment	16	14	6	6	6	48
Pipe, steel	7	3	2	....	....	12
Pumps	2	9	2	3	2	19
Railroad equipment	....	....	1	....	....	1
Refrigerators, Refrigerator cabinets and equipment	2	7	1	2	....	12
Sheet metal products	8	7	4	....	....	19
Springs	....	7	2	1	1	11
Stampings	8	9	....	....	....	17
Stoves, ranges, water heaters, furnace and orchard heaters	....	12	5	3	2	22
Structural and ornamental iron and steel work	6	8	9	2	1	26
Tanks	....	1	2	1	....	4
Tools, machine and hand	....	10	2	....	2	14
Trailers, tractor	....	....	1	....	1	2
Trailers, house	5	2	1	....	....	8
Trucks, indoor	....	4	3	....	....	7
Tubing, steel	....	....	1	....	....	1
Wire work	3	4	1	1	....	9
						611

Graham Industries Buys Oakland Yard

Washington

• • • **Plans of the** Graham Industries, Inc., for consolidation of its activities at Oakland, Calif., were brought a step nearer realization through purchase of the West Yard of the government-owned Moore Dry Dock Co., at that city. WAA announced the purchase price as $2,750,000 on closing the deal.

Originally a part of the scrambled facilities of a Maritime shipyard, the West Yard is an intact operating unit and has been under lease to Graham since August, 1946. Property to be transferred under the sale includes a 52-acre site, five buildings with a total of 208,000 sq ft of floor space, and various items of machinery, tools and other equipment.



CMP "PAPER THIN" STAINLESS STEEL

● With competition for the consumer dollar stiffening, alert fabricators are growing increasingly aware of the profit and production advantages of CMP Stainless Thinsteel. Many are already cashing in on this precision material . . . others may be missing a good bet in neglecting to check its possibilities.

can you apply these 10 advantages to your product?

- Unvarying coil-after-coil dimensional accuracy, physical properties and chemistry.
- Corrosion resistant and heat resistant properties inherent in various grades.
- Wide range of physicals and analyses — tailored for your job.
- Extremely close tolerances — for more parts per ton.
- Extra long coils — for less downtime, more efficient production.
- Superior surface finish cuts finishing costs.
- Gauges thin as .001"— for lightness with strength.
- Quick mill shipment to keep your production lines running.
- Eye-appeal that gives your product greater sellability.
- The product of a specialist — for CMP produces *only* cold rolled strip steel.
- Write, wire or phone CMP today.

THIN STEEL

STRIP STEEL

CMP PRECISION COLD ROLLED

GIVES MAXIMUM PRODUCTION PER TON

THE COLD METAL PRODUCTS CO.

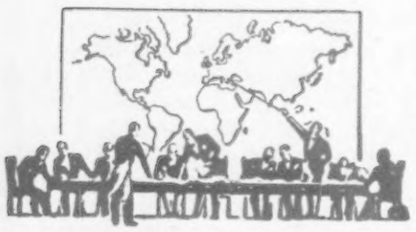
YOUNGSTOWN 1, OHIO

Sales Offices

NEW YORK • CHICAGO • DETROIT • ST. LOUIS
BUFFALO • DAYTON • LOS ANGELES

European Letter . . .

• Government's handling of the economic crisis has turned into a political crisis . . . Labor Party's power of decision has almost totally disappeared . . . Its leaders do not know where to lead.



LONDON — Second thoughts about the government's handling of the latest phase of the economic crisis are no more cheerful than those provoked by the Prime Minister's speech in the House of Commons. Indeed, in one important respect, the crisis has changed in its character and become more ominous in the process.

Formerly it was still an economic crisis, a matter of needs and resources. Now, it has become a political crisis, a matter of confidence. Then, the chief anxiety was whether the government had a policy. Now, there is growing anxiety whether the country has a government.

The Labor government and the Labor Party now find it impossible any longer to conceal from the world the fact that they are so unsure of themselves and so rived with differences that their power of decision, never very large outside those Elysian realms where nationalization schemes are drawn up, has almost totally disappeared. The whole course they have pursued this year long ago pointed to the conclusion that the Cabinet could not make up their mind—but those who wished the government well resisted the conclusion, since it implied such a monstrous dereliction of duty.

But the recent performance prohibits any other verdict. The press is eloquent testimony to the shock. With the exception of the duty-bound *Daily Herald,* not a single paper has had anything good to say of the government. Those organs which, like *The Times,* the *Manchester Guardian* and the *News Chronicle,* have hitherto been most friendly to the government and to Mr. Attlee personally have been the most outspoken in condemnation of them and of him.

According to those reports that have run the gauntlet of the new definition of Parliamentary privilege, the Parliamentary Labor Party itself now recognizes that its leaders do not know where to lead. The astonishing contrast between the forecasts of downright, drastic, ruthless action and the pitiable performance—the contrast that has so much angered the back benchers—is apparently to be explained, not by any lack of the intention to be forthright, but by the fact that, when it came to the point, the Cabinet could not agree on anything to be forthright about. So those unlucky Ministers who were compelled to speak took refuge, each according to his character, Mr. Attlee in banalities, Mr. Dalton in verbal rotundity, and Sir Stafford Cripps in eloquent moralities.

SUBSEQUENT events have underlined the nervelessness of Ministers. The whole episode of the Supplies and Services Bill has revealed them in an attitude of vacant indecision. The shilly-shallying over the nationalization of the steel industry contributes to the same impression.

Reprinted from The London Economist by special permission.—Ed.

Most of the members of the government are by now heartily sorry that the word "steel" ever crept into the pages of "Let Us Face the Future." They dare not back out completely.

On the other hand, they have no illusions about the administrative, Parliamentary and public consequences of going ahead and, for all their obstinate party rancor, they know that this is not the time to split the country wide open. They would gladly find a compromise that would enable them to tell their followers that they had done something, without in fact doing anything very much.

Mr. Morrison had worked such a plan out. But the representatives of the left wing in the party and in the Cabinet, led by Mr. Aneurin Bevan, will not hear of compromise. They are a small minority, but Mr. Bevan is one of the few Ministers with the moral courage to resign on what seems to him to be a matter of principle and that, in this Cabinet, gives him great power. He is using it, today to insist on the nationalization of steel, tomorrow probably to protect his housing program against any more cuts; in either case to make mischief.

IN DIFFICULT times, the British people will always respond to strong leadership. By so much more are they likely to be dismayed by the discovery that there is no hand at all at the helm. The government has, in the last few weeks, thrown away a priceless asset. It allowed, it even encouraged, the public to be keyed up to a pitch of rueful, but nevertheless resolute, expectation of sacrifice and effort. For the first time in this economic Battle of Britain, it was getting ready for tears and toil.

When the Prime Minister rose to speak recently, there was an atmosphere of emotional tension; the nation was waiting for the word of command. The mood was punctured and deflated, and it will be very difficult ever to recreate it. The public will be very hard henceforward to convince of the reality of a crisis. If Ministers have hitherto enjoyed from the public the benefit of the doubt, they will henceforward have to fight against a tide of distrust.

Recently the view was expressed here that the present crisis was the planners' last chance. It is now unfortunately clear that it has not been taken—through no fault of the central group of permanent and temporary civil servants, who have doubtless done their best to keep their masters' noses to the grindstone of reality.

But planning as practiced by the

present government is now clearly bankrupt. It is true that Ministers and their advisers are busy working out a new set of estimates, targets and programs. But these are about as pointless as the plans of the General Staff in an army where the troops no longer obey their officers.

The real issue is not whether the program is the right one but whether, and how, it will be achieved. The government has lost control of the situation; how can it regain it? To these essential questions it is clear that Ministers have no idea of the answers.

SOMETHING was said about the extent to which the nation's crisis is an economic one or a moral one and the way in which what looks like bad morale may merely be bad economics. But there is one place where the crisis is wholly moral, and that is in Downing St. No one but a fool would pretend that he knows how to solve the nation's problems. But it is not very difficult to suggest quite a number of things that could be done and would certainly both exercise the right influence at home and give the necessary evidence to foreign observers (whose verdict will be final) that the ability and the will to recover still exist.

One would be to start the immediate export of coal, if possible from increased production, but if necessary at the cost of domestic consumption. Another would be to make it quite clear that food imports will be cut before essential industry is allowed to stop for lack of raw material. A third would be to postpone the bulk of the housing program to clear the way for productive capital projects — those, that is to say, that will directly result in increased production especially of food, power and exports, within 3 years.

A fourth would be to face the fact that these large capital projects can only be accomplished at the cost of consumption and that they can only be prevented from causing inflation by deliberately cutting the national consumption until they are wholly financed by current savings—which involves creating a real budget surplus, either by economies in expenditure or by increases in taxation, of some £400 million or more.

These things are terribly difficult for politicians to attempt. But until somebody in Downing St. acquires the moral courage to demand that they be done, and to endanger his place and his popularity to get them done, the nation will continue to slither rudderless from weak expedient to unworkable compromise

Recent Party Caucus In London Fails To Settle Nationalization

London

• • • **Another meeting in** the caucus rooms of the British House of Commons has done little to clear up the matter of nationalization of the steel industry in that country. The latest economic crisis has served to discourage the government somewhat, and labor party back bench members recently took the opportunity of a meeting of their group to catechize their leaders.

The position is no clearer as a result of the recent meeting, the latest occasion for prognostications on this particular theme. What is without doubt is that the rank and file of the Labor members in the House of Commons are not at all satisfied with the Government's handling of the economic crisis. Some of them, perhaps less concerned with the immediate situation, felt that the present crisis might be used as a lever to push some of their pet socialist schemes into the background.

There undoubtedly was and still is a feeling in the Labor Party that the government is not so obsessed with the idea of nationalizing the steel industry as it was some time ago. At the recent meeting, the government was pressed to push on immediately with a plan for socializing the industry. Herbert Morrison, No. 2 man in the government, told the party members plainly that the government's duty was to govern, that the memebrs could express an opinion but that the government had to decide according to the circumstances at the moment what was practical.

By a narrow majority vote the matter was left in the hands of the government, but there is no doubt that a good many Labor members of Parliament remain dissatisfied. The day after the meeting, members of the Cabinet met representatives of the Iron and Steel Federation, when it is understood that they stated plainly and unequivocally that they adhered to their policy of full-scale nationalization of the iron and steel industry.

It is evident that the cabinet has enough on its plate at the moment in getting Britain out of its troubles without bringing another major policy before Parliament with all its political and industrial repercussions. Wedded therefore though they may be to the idea of full-scale nationalization it seems doubtful if a bill can be brought before Parliament during the next session.

QUITE A CHANGE: *Appropriately named the "Vanguard" is this new British Standard car, the company's first post war model, of which the first 6 months' output will be for export. The company has been concentrating on the Standard Eight, Twelve and Fourteen. The figures refer to horsepower, not number of cylinders.*

PERSONALS

o o o

• **W. S. Dawson** has been elected vice-president in charge of sales of the U. S. Automatic Corp., Amherst, Ohio. Mr. Dawson was formerly president and general manager of Romec Pump Co.

• **W. A. Staublin** has been appointed sales manager of hydraulic equipment for the hydraulic division of the Sundstrand Machine Tool Co., Rockford, Ill. He has been associated with engineering and sales departments of the hydraulic division since 1936. **C. W. Lang** has been appointed sales manager of the oil burner pump division of the company.

• **Lloyd H. Mulbarger** has been appointed sales engineer in the New York sales office of American Car & Foundry Co. He began his career with the Nickel Plate R.R. at Lima, Ohio, as an apprentice in 1926. In 1929 he was transferred to the engineering department at Cleveland as a car draftsman. Two years later he was transferred to the advisory mechanical committee of the Chesapeake & Ohio, Erie, Nickel Plate, and Pere Marquette Railroads. He then advanced to leading draftsman, assistant chief draftsman, and later chief draftsman, which position he held at the time of his joining the American Car & Foundry Co.

• **Howard F. Powders** has been appointed special representative, aviation, in the general sales department of American Steel & Wire Co., Cleveland. Mr. Powders has been in the manufacturers' division of the general sales department since April. Prior to his association with American Steel & Wire, he was connected with flight operations of American Overseas Airlines.

• **William U. Townsend** has been named assistant manager of the industrial division of National Gypsum Co., Buffalo. **Raymond W. Haugh** has been named manager of industrial lime sales; **Walter S. Hamme,** agricultural sales manager; and **Douglass H. Shearer,** eastern district industrial sales manager. Each of these men has been with the company for at least 7 years.

• **Selby F. Greer** has been appointed general sales manager for the Kellogg Div. of American Brake Shoe Co., New York. Mr. Greer, formerly assistant general sales manager, has served in various sales capacities since joining Brake Shoe. He will continue to be located at the main plant in Rochester, N. Y. **H. O. Holland,** vice-president and former general sales manager, will assume new duties.

LEE BARTHOLOMEW, vice-president in charge of sales, Southern States Iron Roofing Co.

• **Lee Bartholomew** has been named vice-president in charge of sales for the Southern States Iron Roofing Co., Savannah, Ga. Mr. Bartholomew was a consultant during the war on emergency Maritime Commission housing in Florida, Alabama, Mississippi and Texas. He comes to Southern States from the Celotex Corp., Chicago, where, after serving as assistant general sales manager, he was engaged in a special program of sales development for Cemesto.

• **Dr. B. E. Warden,** former dean of students and director of student personnel at Carnegie Institute of Technology, has been appointed educational director of National Supply Co., Pittsburgh.

• **C. C. Cook** has been appointed northern district manager of Ohmer Corp., Dayton, subsidiary of Rockwell Mfg. Co., replacing **R. E. Barrett,** who is being transferred to the Pacific district. Mr. Cook, for many years, has been associated with the cash register industry in various capacities including salesman, sales agent and sales instructor. For 8 years prior to the war he was the Ohmer sales representative in Cleveland. He will establish his headquarters in Chicago. Mr. Barrett, who for the past 2 years has been the northern district manager for Ohmer, is being transferred to the Pacific district with headquarters in San Francisco.

• **Charles F. Kahnhauser** has been named sales manager of metal decorating products in the Philadelphia district office of Interchemical Corp.'s finishes division. He began his career in 1916 as a varnish salesman for the old Ault & Wiborg Co., now a part of Interchemical Corp. After 16 years in the middle west, Mr. Kahnhauser accepted a territory in Syracuse, N. Y. Ten years later, in 1942, he was transferred to Philadelphia.

• **Howard J. Davis** has been appointed manager of product research and development for the Colorado Div. of Colorado Fuel & Iron Corp., Denver. Mr. Davis came to CF&I in 1940 to establish a welded wire fabric division. Three years later he was appointed assistant manager of wire product sales. **Floyd E. Watson** has been promoted from district sales of the Salt Lake City office to manager of sales, wire products, for the Colorado Div. Mr. Watson has served CF&I in several territories. **James N. Counter,** district manager of the Phoenix territory, has been transferred to the Salt Lake City territory in the same capacity. **Cliff Martin** has been appointed district sales representative in the Phoenix territory. In Texas, **Lou J. Renner** has been made manager of wire rope sales and **Luke Helms** has been appointed assistant manager of wire rope sales but will be located in Denver. Mr. Renner has been a salesman for the Wickwire Spencer rope. He will be located in Fort Worth.

• **Harold S. Falk,** president of the Falk Corp., has been elected to the board of directors of Allis-Chalmers Mfg. Co., Milwaukee.

• **Ralph M. Trent,** for 14 years manager of Pittsburgh and Central Pennsylvania district of Pangborn Corp., has been transferred to the Pacific Coast as manager of all Pangborn business on the West Coast. Mr. Trent will be located in Los Angeles. **John D. Wise,** former director of purchases of Pangborn Corp. and district sales representative in the Chicago district since 1945, will succeed Mr. Trent as manager of the Pittsburgh district. **Frank Newell,** having completed 2 years' service in sales engineering at the home office in Hagerstown after 6 years' field work throughout the middle west, will be transferred to the Chicago office as district sales engineer.

• **W. L. Tucker** has been made assistant manager of the service and mechanical department of Chevrolet Motor Div., Detroit. Mr. Tucker will have charge of Chevrolet service and mechanical activities in the western half of the United States.

• **Robert J. Barry** has joined Hetz Construction Co., Niles, Ohio, as manager of the brokerage department.

• **J. K. Sutherland** has been appointed sales manager of Benchmaster Mfg. Co., Los Angeles. Mr. Sutherland comes to Benchmaster from Diamond Machine Tool Co., where he has been sales manager for the past 4 years.

• **T. W. Allsworth** has been appointed vice-president in charge of engineering and construction of Intercontinental Engineers, Inc., Chicago. Mr. Allsworth's early experience included the organization and operation of the Universal Machine & Equipment Co. He became associated with Intercontinental Engineers in 1946 as chief project engineer.

• **James E. Chasmar** has been made works manager of the Watertown, Mass. plant of Manning, Maxwell & Moore.

C. W. LAPIERRE (left), vice-president in charge of engineering, American Machine & Foundry Co., and H. L. NEWELL (right), manager, central engineering department.

• C. W. **LaPierre,** formerly manager of General Electric Co.'s electro-mechanical division of the General Engineering & Consulting Laboratory, has joined American Machine & Foundry Co., New York, as vice-president in charge of engineering. **H. L. Newell,** formerly president of Waring Products Corp., has been appointed manager of American Machine & Foundry Co.'s central engineering department with headquarters in Brooklyn.

• **Walter E. Jubien,** recently of the French Supply Council, Washington, has become associated with the Barium Steel Corp., New York. He will assist in the further development of the export sales of products of subsidiaries of the Barium Steel Corp.

• **J. C. Witherspoon** has been appointed division superintendent of openhearths at the Donora, Pa., Steel & Wire Works of American Steel & Wire Co., subsidiary of U. S. Steel Corp. **J. M. Nelson** has been made chairman of the blast furnaces, the openhearth and the coke committees and will be located at company headquarters in Cleveland. Mr. Witherspoon returns to the plant where he first started for the Wire company and where he had many years of service. He began in 1916 as a second helper in the openhearth department. He progressed through the ranks until he was named assistant general superintendent of the Donora Steel & Wire Works before being transferred to the Duluth works as general superintendent of the steel plant. In 1945, he was transferred to Cleveland as chairman of the blast furnaces, openhearth and coke committees, which position he now relinquishes to assume his new duties. Mr. Nelson's first association with U. S. Steel Corp. was in 1908, when he started with the Oliver Iron Mining Co. In 1913, he became a timekeeper with the Minnesota Steel Co., which since has become part of American Steel & Wire. He remained in Duluth until 1937, when he left the position of superintendent of openhearths to go to Donora. Since 1945, he has been division superintendent of openhearths at the Donora Steel & Wire plant.

• **Irving J. Fletcher** has been appointed to the newly-created position of chief engineer of the product and development engineering section of the American Hardware Corp. of New Britain, Conn. Mr. Fletcher leaves his position as factory manager of Corbin Cabinet Lock Div., which he has held for 7 years. **Frank L. Mathes, Jr.** has been appointed to succeed Mr. Fletcher as factory manager of Corbin Cabinet Lock Div. Mr. Mathes has been assistant factory manager for the past 3 years.

• **L. R. Garretson,** since 1925 advertising manager of Leeds & Northrup Co., Philadelphia, has retired. Mr. Garretson's successor is **Kenneth W. Conners,** who has been a member of the advertising division since 1934.

• **Walter J. Clarke** has been appointed assistant manager of the ferrous and nonferrous metals and surplus materials department, James Flett Organization, Inc., Chicago. Mr. Clarke was formerly a member of the staff of M. Cohen & Sons Co., and during the war was chief of the scrap and surplus material disposal branch of the Army Air Forces at Wright Field, Dayton.

• **Ralph D. Au** has been appointed manager of the rubber purchasing department of the B. F. Goodrich Co., Akron, Ohio. Mr. Au has been with the company since 1933. He spent several years in the chemical laboratories and raw materials division in Akron before being sent to New York in 1938 to open the New York office of crude rubber inspection. In 1942 he was loaned to the Rubber Reserve Co. as assistant chief inspector of crude rubber. He again headed the B. F. Goodrich New York office of rubber inspection from 1943 until his present appointment to the purchasing department. **Lee Plageman** has been named auditor for the new plastics plant which the B. F. Goodrich Co. will operate in Marietta. Mr. Plageman has been with the organization for the last 20 years, starting as a cost clerk in 1927. He later became a cost accountant and has spent most of his career in that phase of the company's business.

ROGER G. DELONG, manager, hydraulic division, Twin Disc Clutch Co.

• **Roger G. DeLong** has been appointed manager and **W. B. Gibson** has been appointed sales manager of the hydraulic division of the Twin Disc Clutch Co., Rockford, Ill. Mr. DeLong has been serving as both acting manager and sales manager of the Rockford Div. Mr. Gibson has been assistant district manager of the eastern territory.

• **Charles R. Wallander, Jr.** has joined the firm of Dulien Steel Products, Inc., New York. He will be directly connected with the procurement department of their warehouse division.

• **J. K. Rector,** formerly assistant advertising manager of E. W. Bliss Co., has been appointed advertising and sales promotion manager of the Watson-Stillman Co., Roselle, N. J.

• **O. C. Burger** has joined the Gordon Lubricating Co. of Pittsburgh as lubricating engineer. Mr. Burger was formerly associated with Pure Oil Co.

• **E. W. Sanders,** sales manager of Goodyear Tire & Rubber Co.'s rubber-to-metal products, will resign Sept. 1 to become vice-president and sales manager of the Wilsolite Corp., Buffalo. **E. R. Coate** has been appointed acting manager of Goodyear's printer supplies sales in Akron, Ohio. Mr. Coate has been with Goodyear since 1936.

• **Norman C. MacDonald,** who has been vice-president and general manager of the Crosley Distributing Co., New York, since 1945, will become general sales manager of Crosley Div. of Avco Mfg. Corp., Cincinnati, effective Sept. 2. Mr. MacDonald, for many years, was eastern regional sales manager for Crosley. **Bert Cole,** who has served under Mr. MacDonald since 1944 as general sales manager, will become general manager. **Sydney D. Mahan,** former head of both sales and advertising, will head up an expanded advertising, sales promotion, and public relations department. **Corley W. Kirby** has been appointed domestic sales manager of Crosley. Mr. Kirby has served Frigidaire as branch manager in Newark, N. J.; sales manager of the New York branch, and in various capacities at headquarters in Dayton, Ohio. **Lee Stratton,** whom Mr. Kirby succeeds, will head up a new section on home freezers. Mr. Stratton started with Crosley in 1944 as manager of refrigeration sales and has assisted in the development of new lines.

...OBITUARY...

• **T. Rice Davis,** 70, retired managing director of the Eastern Malleable Iron Co., Naugatuck, Conn., died Aug. 12.

• **Andrew A. Kramer,** 82, founder and president of the Columbian Steel Tank Co., Kansas City, died recently.

• **Clarence E. Upham,** 73, for 30 years safety engineer at the Lynn, Mass. plant of the General Electric Co., died Aug. 12.

• **Karl F. Tiegel,** vice-president, director of purchasing and a member of the board of directors of the Pittsburgh Piping & Equipment Co., Pittsburgh, died Aug. 13. He had been associated with the company since 1910 as purchasing agent. Mr. Tiegel also was president of the Hempfield Foundry Co. and of the Piping Supply Co.

• **John A. Taylor,** 44, assistant general manager of the Bethlehem plant of Bethlehem Steel Co., died Aug. 12. He had been ill since April.

• **L. R. Crago,** manager of cut nail sales and also general manager of the LaBelle Works of Wheeling Steel Corp., Wheeling, W. Va., died recently. He had served more than 49 years for Wheeling Steel and predecessor companies.

DO NOT MISS THIS EXHIBIT

JONES & LAMSON will present a complete line of —

- **UNIVERSAL TURRET LATHES**
- **FAY AUTOMATIC LATHES**
- **AUTOMATIC THREAD GRINDERS**
- **OPTICAL COMPARATORS**
- **AUTOMATIC OPENING THREADING DIES AND CHASERS**

You Will See: Machines designed to meet present day competition by producing your products quicker, better and at lower cost.

You Will See: Jones & Lamson Turret Lathes and Fay Automatic Lathes removing metal at astonishing rates, with precision and accuracy — Mass Production Thread Grinding at its best — The world's most complete line of Comparators for inspection by optical projection.

You Will Meet: Jones & Lamson Engineers ready to discuss any or all of your production problems.

JONES & LAMSON
MACHINE COMPANY
Springfield, Vermont, U.S.A.

Manufacturer of: Universal Turret Lathes • Fay Automatic Lathes • Automatic Double-End Milling and Centering Machines • Automatic Thread Grinders • Optical Comparators • Automatic Opening Threading Dies and Chasers • Ground Thread Flat Rolling Dies

Industrial News Summary...

- **No Letup in Steel Shortage Seen**
- **Demand Is Strong and Backlogs Up**
- **Production Difficulties Looming**

THE industry is straining everything it has to keep steel output at a high level, but the steel shortage measured against consumer demand is expected to continue for some months to come. The easing off in demand for some major steel products, expected by a few steel officials, has failed to materialize.

The inability of the industry to get the steel ingot rate above 95 pct of capacity has resulted in an important increase in steel backlogs at many steel firms. Unshipped order tonnage this week is in greater volume than a few months ago with many producers.

The long term scrap shortage, lack of pig iron and the necessity for mechanical repairs on steel mill equipment, is expected to plague steelmakers for some time. In the midst of this situation some producers continue to withdraw from territories where the freight absorption is too high. This leaves customers in that area without a regular source of supply. Some cases involving the temporary elimination of some steel products from the market have been due to enforced reduction in steel output because of blast furnace repairs.

One large midwestern company, because of urgent blast furnace rehabilitation, will in the near future be forced to eliminate, temporarily at least, the production of a large part of its normal hot-rolled bar output. This has caused consternation among some bar consumers who will now be without a regular source of supply for a substantial part of their requirements.

PIG iron requirements for steelmaking and for merchant use are at an all-time high. Because of blast furnace rehabilitation this condition is expected to be serious for several months at least. Some steel firms have been receiving a better supply of steel scrap but they have been unable to lay aside inventories for use this winter. Other sources feel that the steel industry will go into the winter months with a slim reservoir of scrap and not enough coal on hand to withstand severe winter conditions.

In the face of current steel tightness, Americans will soon feel the first practical results of the Marshall Plan when the U. S. Government directs the shipment of about 120,000 tons of finished steel over the next 6-month period to Europe for rehabilitation of the Ruhr districts. Within the next 30 days the War and State Departments will have made up their minds as to the exact tonnage which American steel companies must furnish. At that time a committee of experts from the steel industry will attempt to screen down these requirements to obtain a minimum tonnage which will carry out the War Department's program. Although the British had insisted that semifinished steel be supplied, American steelmakers, because of the scrap shortage, have insisted that only finished steel products be shipped.

The entire program for the rehabilitation of coal mines, steel mills and railroads in the Ruhr involves about 420,000 tons of finished steel, including the 120,000 tons which America will supply. Many months ago British authorities were in the United States attempting to obtain large supplies of steel for their own rehabilitation but were unsuccessful in getting a firm commitment.

SHORTAGES and distribution difficulties are affecting major producers as well as consumers. Another freight car crisis is expected by October, when demand for cars will reach a peak. One major railroad this week has only 4 days' supply of coal for its entire system—due to a coal car shortage and not a coal shortage. With railroads retiring cars at a rate substantially above the production of new rolling stock, no immediate relief in the transportation situation can be expected.

Although the steel industry is furnishing steel at a rate above that promised for a 10,000 car month to carbuilders, authoritative sources believe that freight car output in October will hardly reach 8000 units—2000 below the goal set some months ago. The distribution and production of component parts plus the lack of skilled labor is responsible for this situation at carbuilding plants. Much of the material is coming from long distances and must be assembled in banks sufficient to enable an economical mass production of the maximum number of cars.

Steel ingot output this week is up only ½ point to 93.5 pct from last week's revised rate of 93. While the hot weather has been blamed for some of the output loss, the major reason is the lack of sufficient scrap and pig iron to more actively engage available capacity.

The downward trend in scrap prices was halted this week and few changes were registered at major centers. THE IRON AGE steel scrap composite price this week dipped to $37.83 a gross ton, down 9¢ a ton from last week's figure of $37.92. A technical decline at Pittsburgh, averaging 25¢ a ton, was responsible for this slight decline. THE IRON AGE pig iron composite price this week was off 25¢ to $37.10 per gross ton from last week's figure of $37.35, due to a reduction of the Buffalo component, where the price of scrap used by one producer in its pig iron sales declined.

• **FORD PENSION PLAN**—Under the terms of the proposed Ford Pension Plan, the entire cost for past service up to May 31 will be borne by the company, estimated at $180 million. For service benefits after that date the employee will pay 2½ pct of his earnings up to $3000 a year and 5 pct on annual earnings above that amount. The company will contribute the remainder of the retirement fund at an estimated cost to it of between $7 and $15 million annually. Employees will make no contribution until after Sept. 15 this year. Normal retirement age at Dec. 31, 1947 will be 70 years and will decrease to 65 thereafter.

• **STILL MINUS**—Class 1 railroads installed 26,174 new freight cars the first 7 months of this year. During the same period 32,192 cars were retired from service, thus further decreasing the available car supply by 6017 cars. The latest records of the number of cars formerly in bad order, which may have now been returned to service, are not available so that the decrease in total cars may not be as great as indicated.

• **RATHER OBVIOUS**—With the car builders yards full of all types of steel needed to meet the proposed building schedule, and production still low, it appears political rather than physical reasons are to be blamed. It seems rather odd that railway supply companies and car builders should on their own hook spend considerable money in plugging for a 6 pct return on railroad investment. Many observers believe that the entire railroad industry is attempting to use the car shortage as a lever for higher rates, and new car building records to date seem to substantiate this.

• **REPAIR DISPUTED OVENS**—Bethlehem Steel Co. is spending $1,500,000 to repair a battery of 60 coke ovens at the Lackawanna plant. The first 20 are scheduled to be ready for operation Sept. 15. The program will give the plant a total of 383 available ovens with a rated capacity of 6000 tons of coke daily. The company said the battery was "ruined" when employees walked off the job in January, 1946, leaving the ovens unattended. This statement was disputed by Joseph P. Molony, district director of the CIO-United Steelworkers, who declared that the company refused at the time of the steel strike to permit union members to act in a maintenance capacity. He further asserted that the ovens were "obsolete."

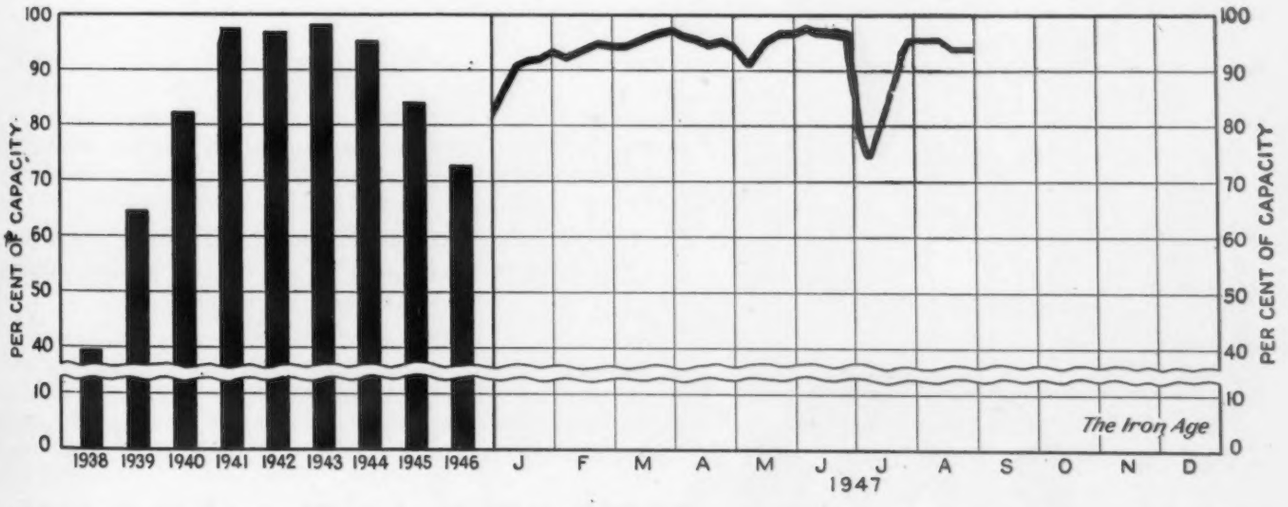
• **PLAIN TALK**—Ben Moreell, new J. & L. president, left no doubt in the public's mind as to what he thought about a recent 4-day wildcat strike involving 50 scarfers at the company's Hazelwood plant. Terming the walkout as a "capricious" act of willful men," he said: "I feel that I would be derelict in my duty to the public, to our stockholders and to our employees if I should permit or condone such unfair and capricious conduct."

• **CONSTRUCTION ACTIVITY**—While large scale private construction may have been held up because of the price situation, this is definitely not true of projects sponsored by federal, state, county and city governments. In most states, road projects held up during the war are now in full swing. Hospital construction is continuing at a high rate and postponed flood control work is now under way. Many municipalities which had felt that demand for water in the postwar period would not increase have now found it necessary to make substantial additions to their water works. Federal and state dam projects are also becoming active. Major bottleneck continues to be cast iron pipe. 6, 8 and 10 in. diameter deliveries run from 12 to 15 months. Tight deliveries on cast iron fittings have kept down the use of substitute pipe.

• **POWER COSTS UP**—Authority to increase its power rates to 240 large industrial consumers in the Pittsburgh district was granted the Duquesne Light Co. recently by the Pennsylvania Public Utility Commission. The new rate will become effective Sept. 1, the commission ruled. It applies to consumers using more than 100,000 kwh a month.

• **STEEL SYNDICATE** — Twenty-five manufacturers, coast to coast, whose products range from stoves to lawn mowers, have formed a syndicate to beat the steel shortage. Through the purchase of the Phoenix Iron Co., located at Phoenixville, Pa., together with the previously acquired Apollo Steel Co., the group headed by Arnold H. Maremont of Chicago, formed the new syndicate called the Phoenix-Apollo Steel Co. Sheet bars from the Phoenix mill, which was purchased for approximately $4 million, will be rolled into sheets at Apollo. Operations under the new setup will begin Sept. 15. Other officers of the syndicate include D. M. Houghton, Atlas Tack Corp.; Frank Gibson, Gibson Refrigerator Co.; Bernard Math, Chicago attorney; and Bernard Mitchell of Mitchell Mfg. Co.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
August 19	98.0*	91.5	89.0	93.0*	93.0*	102.0	100.0	99.0	101.0*	110.0	96.0*	82.0	94.0	93.0*
August 26	99.5	90.5	88.5	94.0	98.0	102.0	100.0	99.0	100.5	109.0	96.0	82.0	95.5	93.5

*Revised.

They don't pay off on DEADWEIGHT

When frame, body panels, fenders, wheels and other structural parts are made of N-A-X HIGH-TENSILE, a truck uses its horsepower to deliver goods, not deadweight. The high physical properties of N-A-X HIGH-TENSILE make possible weight savings up to 25% in section, yet maintain superior strength and have increased resistance to fatigue, corrosion, abrasion and denting.

On the job, the savings in pounds mean a savings in dollars. Gasoline economy is improved. Maintenance costs are reduced. Life factor is increased.

If you make a product that moves, it will move more efficiently and economically through the application of N-A-X HIGH-TENSILE. Good formability, excellent weldability and fine surface texture for finishing make N-A-X HIGH-TENSILE a great steel to work with, too.

MAKE A TON OF SHEET STEEL GO FARTHER

Specify—

N-A-X

HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN

UNIT OF NATIONAL STEEL CORPORATION

U. S. Planning New Raw Materials Board for Marshall Plan

Fear Steel Cartel Rise From Allocations and Direction Of World Markets

o o o

By JACK R. HIGHT
Associate Editor

o o o

New York

• • • **State Dept. officials** are studying with representatives of the European countries the moves that may be necessary to organize the allocation of raw materials to the steel industries on the continent, and the possible direction of their markets.

The first requisite that Secretary of State Marshall specified when he set the stage for American assistance in the reconstruction of Europe was that Europe should work out a maximum of self help. In order to put the available steelmaking facilities and the available raw materials to the best possible use, both European and American diplomats agree that it will be necessary to reestablish a peacetime counterpart of the wartime Combined Raw Materials Board.

This joint allied group sat down over a conference table and divided among those present the available supplies of all those raw materials in short supply. They took into consideration which industries were most efficient, and many other factors. A new body, reestablished under the Marshall plan would have to do the following planning for the steel industry:

(1) Decide which countries could best utilize raw materials to produce steel.

(2) Establish steel production total for Europe, and set quotas for various countries.

(3) Determine most efficient distribution pattern for finished steel products, considering the shortage of shipping tonnages, rail cars, and locomotive power.

(4) Consider subsidy system to assure that the most efficient operators from the standpoint of using available resources are financially able to produce the required tonnages. This will of course draw the group into considerations of the steel price structure, both in domestic and export markets of the various countries.

To perform these tasks adequately it will probably be necessary to call on the leaders of the steel industries in Europe for expert advice on capacity, operations, raw materials and distributive problems. The technique of cooperation with most of the steel firms will be simple, as most of the countries boast trade organizations which are compulsory which already function in allocations, prices, sales, and subsidy fields.

There are sources in Europe which maintain that an organization already exists which functions internationally in most of these fields. Steel mill consulting engineers are alleged to have a breakdown of the future export quotas of the steel industries of the world, reportedly drawn up by steel producers. Steel mills are said by some sources to be respecting prewar quota arrangements in export markets as set up by the International Steel Cartel, although there is no formal cartel agreement in effect at the present time. There are, of course, European steel men who assert that although no written agreement is in effect today, there is a general understanding in existence which might be termed an operating "gentlemen's agreement."

Of course the primary compelling factor in the establishment of any such cartel arrangement — cutthroat price competition is still conspicuously absent in the world steel market. But firms interested in the construction of new steel capacity, are only one group who may be in-

"Please Don't Say, 'CARTEL.' They're from Washington."

terested in an organized steel market.

Meetings have been held in Brussels since the end of the war to discuss the future of the cartel. Former members of certain marketing agreements for specific steel products have also held meetings to discuss future courses of action, and the former members of more than one product group have been busily helping each other out in these difficult times. A little extra tonnage of billets here, a letter of recommendation for a beleaguered German friend there, all in the name of international goodwill.

Whether there is a sufficiently tightly-knit body in existence today to carry out any of the functions required by a rational reconstruction program for Europe, the State Dept. recognizes that there are dangers involved in setting up a powerful raw materials allocations board as specified above.

The European steel men who would be called in to advise in these matters do not agree with the views of the U. S. government in affairs involving cartels. They believe that the only way in which they can protect themselves from the "fury unleashed"—American competition—will be through a cartel agreement.

Thus calling them together to perform many of the functions of the cartel under the sponsorship of the Marshall plan will be much easier than stopping them by "moral suasion" when the economic crisis is over.

FTC Setting Up Trade Practice Conferences To Settle Complaints

Washington

• • • **The Federal Trade** Commission last week made public a new statement of policy under which the trade practice conference method of settling complaints will be widely used, and on many occasions initiated by FTC. A reappraisal of the policy applying to settlement of cases by stipulation procedures was also made public.

The action settles a long-standing controversy among the commission's five members as to what the FTC attitude should be.

FTC made it clear however that simple adoption of trade practice conference rules will not grant future immunity to firms in regard to commission complaints. Under the new policy, FTC will use "the trade practice conference and stipulation procedures to encourage widespread observance of the law by enlisting the cooperation of members on industries and informing them more fully of the requirements of the law, so that wherever consistently possible the commission may avoid the need for proceedings against persons who, through carelessness, may violate the law unintentionally."

While this new policy should put an end to FTC's hit-and-miss method prosecution by attacking problems on a cooperative industry-wide basis, the agency declared its reservation of "the right in all cases to withhold the privilege of settlement by trade practice conference or stipulation agreements."

"The object of the commission is to correct—not to punish," FTC stated. "But there must be a reasonable assurance that any cooperative procedure will be effective and provide full freedom to institute such further proceedings as are or may become necessary in the public interest."

FTC further stated that "when conspirators are discovered, or when they are on the verge of being discovered, they would doubtless be glad to make use of the commission's trade practice conference or stipulation procedure as a protection against the more rigorous procedure provided by the antitrust laws."

Trade practice conference rules may include rules against restraints of trade and against violations of the Clayton Act. In so far as such rules may be informative to and followed by members of the affected industries, they have a substantive value, FTC believes.

"They should not be accepted, however, as a basis for the settlement of cases in which the commission has reason to believe that such violations have occurred," the Commission says.

FTC now states that upon promulgation of trade practice conference rules for an industry, examination will be made of pending charges against members. If the pending charges are covered by trade practice conference rules, FTC "will consider the advisability of closing the matters without prejudice to reopening."

Similarly, service of complaint may be withheld upon FTC's receipt of a stipulation agreeing to abstain from "unfair methods of competition or unfair or deceptive acts or practices of commerce." All such stipulations will become matters of public record, and may be used as evidence.

But FTC's ace in the hole is its reservation of the right to withhold settlement privileges sought via trade practice conferences or stipulation agreements. "When in connection with an industry-wide investigation informal matters of whatever nature are docketed against individual members of that industry, from which the promulgation of trade practice conference rules ensues covering the questioned practices, and which are subscribed to and accepted by the affected number of the industry, the commission will give careful consideration to whether or not the public interest requires further investigation of such informal matters," the commissioners decided last week.

Regarding the new policy governing settlement of cases by stipulation, FTC says significantly: "It is not the policy of the commission to thus dispose of matters involving intent to defraud or mislead; false advertisement of food, drugs, devices, or cosmetics which are inherently dangerous or where injury is probable; suppression or restraint of competition through conspiracy or monopolistic practices; violations of the Clayton Act; violation of the Wool Products Labeling Act of 1939 or the rules promulgated thereunder; or where the commission is of the opinion that such procedure will not be effective in preventing continued use of the unlawful methods, act, or practice.

"The commission reserves the right in all cases, for any reasons which it regards as sufficient, to withhold this privilege."

General Motors Layoffs Revive Steel Capacity Charges

Heavier Cars, Bigger Trucks, Spare Parts Boom, Cloud Comparative Studies

o o o

By WALTER G. PATTON
Detroit Regional Editor

o o o

Detroit

• • • **The layoff of 65,000** General Motors workers for periods of 1 to 2 weeks because of a shortage of steel has fanned anew the smouldering fires of criticism of the steel industry for its failure to increase its capacity.

While it is clear there isn't enough steel to meet the automakers' current needs there has been some misunderstanding of the nature of the shortage. Aside from the heavier overall demand there are four factors often overlooked which heavily affect the supply picture as compared with prewar days. Cars and trucks are bigger today and they take more and heavier steel; replacement parts production is higher—for it one major producer uses 2¾ times as much steel as he did before the war; inventories are unbalanced; and accessory production is at a record high.

Thus far, loud criticism of the steel producers by self-appointed spokesmen for the automobile industry has been confined to Walter P. Reuther, president of the UAW-CIO and Henry J. Kaiser. Reuther has accused the industry of "restriction of production and production capacity." Kaiser has insisted that the steel industry is "selling America short." Both Reuther and Kaiser are asking for Government investigations of the steel industry's failure to expand its facilities.

Embarrassingly, the GM shutdown occurred only a few days after Kaiser had intimated that GM had about solved its steel problem.

Neither the Reuther nor Kaiser blast has generated any noticeable enthusiasm in the motor industry although auto executives are frankly puzzled by the fact that the promised easing of the steel supply situation that was scheduled for last spring or mid-summer at the latest is even yet nowhere in sight. A survey this week failed to disclose any steel buyers in the Detroit area who were willing to forecast any improvement in the steel supply situation for many months.

The present GM steel shortage is accounted for at least in part by the fact that deliveries of steel during the first and third week in July (attributed to the Lewis coal scare) was far below expected receipts. The full effect of these deficiencies is now being felt by the car makers. This is particularly true, it is believed, in the case of **General Motors.**

Based on information available at present, the second layoff of GM workers will cut deeper into 1947 car production schedules than the earlier layoffs from July 21 to 25. The fact that the GM plant shutdowns are non-uniform has been attributed to the fact that individual plant managers with sufficient supplies of materials on hand will continue to operate until these supplies are used up. In some cases the shutdown on Fisher Body deliveries may force plant closings that might not otherwise be necessary.

According to reliable sources, GM has made a considerable effort to improve its steel supply situation. Particularly during recent months steel has been transferred in substantial tonnage between various GM plants so as to obtain better inventory balance. There has also been considerable shuffling of steel delivery schedules involving changes that would permit the making of longer runs of steel by the mills. High tensile steel is being used for a number of GM parts, it is reported, where the design of the part and die facilities will permit.

Few people realize the extent to which the steel requirements for the automobile industry have grown since prewar. Passenger cars on an average are slightly heavier and roomier than prewar models. There has also been some shifting in the direction of heavier models by some producers. Fenders are widened appreciably and auto designers began in 1942 to specify wrap-around bumpers both of which require more steel per car.

Most producers are specifying heavier gage steel for fenders and underbodies to combat corrosion. Many of the gadgets in today's cars require more steel than the prewar types. Today's cars contain more gadgets—radios, heaters, bumper guards—even Kleenex dispensers. These also require a considerable amount of steel in the aggregate. The introduction of such a simple thing as duct work to convey cooling air from under the fenders has added to the steel requirements.

Also contributing toward the increased steel requirements of the automobile industry is the growing emphasis on trucks. Truck cabs have become larger and the truck body, instead of a box, is now a carefully engineered structure with nicely rounded corners. Cab-over-engine type trucks which have been built in increasing quantities since the war, require more steel than the standard type.

Steel is being ordered for replacement parts in much greater tonnages than ever before in the history of the industry. One major manufacturer has reported that on a weight basis, the company's steel requirements for replacement parts are 2¾ times the prewar figure.

The possible substitution of aluminum for sheet steel for certain replacement parts is known to be under consideration by some car makers but there is no indication that this can be done on a substantial scale without extensive reworking of the present dies.

Little hope has been expressed here that the resort to transfer of ingots between various steel makers for rolling or the continued use of steel ingots made in the electric furnace and subsequently rolled in other steel plants will make a noticeable dent in the present steel deficiency. While it is recognized that a substantial increase in steel output has resulted from these unusual and costly arrangements, it has been pointed out that with electric furnace ingots quoted in some cases at $95 per ton, the cost of the steel—after freight and conversion

(CONTINUED ON PAGE 129)

World Tin Allocations Increased 15,710 Tons; U. S. Share 7907 Tons

Washington

• • • **World allocations of tin** were increased last week by 15,710 long tons, bringing allocations for the second half of 1947 to 27,041 tons.

The United States' share of the interim allocation amounts to 7907 tons, raising the total U. S. allocation for the last 6 months of 1947 to 14,657 tons, the Combined Tin Committee said in announcing the new quotas.

The total of 27,041 tons "represents nearly all the tin that can be expected to be available during the remainder of 1947," the committee said. It added, however, that "small additional quantities" will be made available later. Present allocations will have to cover to a substantial degree the needs for the consumer countries for this period.

The allocations to individual countries are shown in the accompanying table. The committee has set aside a small reserve to meet "urgent" needs. Requests for minimum additional allocations to improve working stocks will be received from countries far from producing areas and whose stocks prove to be dangerously meager.

Tin metal supplies available are sufficient to meet "only a little more than half the requirements of importing countries," the committee pointed out. Supplies are available at the following sources: United Kingdom, on behalf of Malaya and Hong Kong; the Netherlands; Belgium; China; Siam; and the U. S., for stocks of Japanese tin. Small demands of certain Latin American and Middle Eastern countries may be met from British, Belgian, Netherlands and U. S. sources. Applications to buy Japanese stocks must be in the committee's hands by Sept. 30.

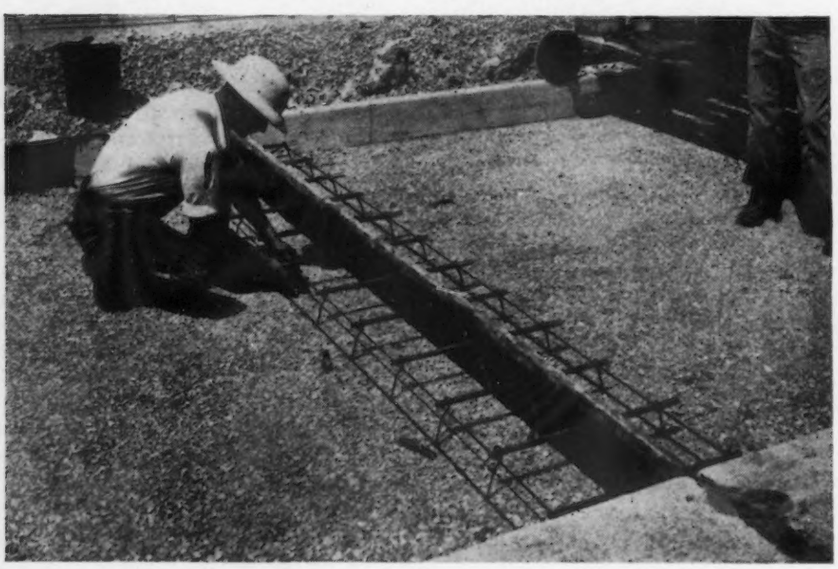
WORLD TIN ALLOCATIONS

(In long tons)

Country	Interim Announced July 8, 1947	New Announced Aug. 21, 1947	Total to Date
Australia	103	172	275
Austria	22	75	97
Canada	300	700	1,000
Czechoslovakia	161	347	508
Denmark	119	46	165
Finland	35	15	50
France	1,515	2,600	4,115
Hungary	....	203	203
India	525	2,738	3,263
New Zealand	42	125	167
Norway	90	51	141
Poland	239	2	241
Sweden	293	200	493
Switzerland	225	297	522
Turkey	90	96	186
United States	6,750	7,907	14,657
Uruguay	25	16	41
Others	797 (a)	120 (b)	917
	11,331	15,710	27,041

(a) To countries not receiving an interim allocation on Aug. 21.
(b) For small allotments to miscellaneous Latin American and Middle East countries which do not submit requirements directly to the Committee.

BAN BUMPS: *Increasingly heavy wheel loads on airport landing strips and on highways have been pushing concrete around at the joints. Bethlehem Steel Co. engineers developed this dowel unit, or "road joint." Here workmen are putting caps on the free ends of the dowels. Over 500 tons, or more than 11,000 individuals units are currently being placed in Pennsylvania highways.*



Former Government Plants Now Produce 11 Pct of Pig Iron

Washington

• • • **Former government-owned** industrial war plants, since sold or leased to private operators for peacetime production, are now producing 11 pct of the nation's pig iron, 7 pct of its steel, and nearly 50 pct of the total aluminum ingot output, WAA said in its summary of activities for the first half of 1947.

Of the $17 billion worth of publicly financed wartime industrial plants, WAA says, some $5.4 billion worth have been declared surplus. By the end of June, $3.2 billion worth had been leased to private operators or sold outright.

These facilities, WAA reports, are now producing pig iron at the rate of 5,000,000 tons annually and steel ingots at about the same rate. Former government primary aluminum plants now in private hands are producing ingots at a rate of 396 million lb annually.

As to metals, the disposal agency states that nearly 2.5 million product tons of steel had been sold up to July 1. About 100,000 short tons of surplus copper refinery shapes have been turned over to industrial channels.

Surplus aluminum disposals totaled 250 million pounds of scrap, 50 million pounds of sheet, 50 million pounds of rod, bar, tubing and extrusions; 15 million pounds of powder, and 15 million pounds of ingot, the report states.

Armco Operating Sinter

Washington

• • • **American Rolling Mill Co.** last week began operation, under a 6-year lease, of government-owned iron ore sintering facilities at Hamilton, Ohio.

Terms of the lease call for a rental of 17¢ per net ton of sintered ore, according to War Assets Administration. Minimum rental has been set at $36,000 per year.

The three buildings transferred under the lease were constructed at a cost of $777,278. Equipment on the 1.15-acre site includes sinter conveyors, sinter vibrating screens, sinter pug mill, sinter machine, feeder screens and hoppers, rod mill, coke conveyors and dust-collecting equipment.

Tin Study Group Sees Shortages Through 1949 With Stocks Declining

Pittsburgh

• • • **The International** meeting of the Tin Study Group, held in Brussels, in April, resulted in the revision downward of the estimate of production of tin in 1946 in view of the difficulties experienced in the Far East in obtaining delivery of mining plant and equipment, the shortage of coal, and the inability of labor to obtain full supplies of rice and consumers' goods. "Mineral Trade Notes," May 20, 1947, published by the U. S. Dept. of Interior, Bureau of Mines, reported the outcome of the further statistical study made by the Group.

The Tin Study Group estimates of mine production of tin from 1947 through 1949 in long tons, tin content, is included in Table I.

Full production capacity of the world's tin fields in 1941 was estimated at 250,000 to 255,000 tons annually. During 1942 through 1945, with the loss of the Far East, world output averaged only about 86,000 tons a year, with consumption between 120,000 and 130,000 tons. Mining in Japanese controlled areas in the Far East was limited during the years from 1942 to 1945, with output about one-sixth of normal.

Japanese failure to mine intensively has added to the life of Far Eastern mines of Malaya, Netherlands East Indies and Siam. About 39,000 tons of tin metal and concentrates were found in 1945 in those areas and in Japan, which constitutes a substantial part of the tin mined during the occupation.

World smelting capacity, about 350,000 tons annually, is roughly twice the prewar production of the mines and substantially greater than mine capacity.

Actual consumption was estimated by the committee at 146,000 tons for 1946, and the 1947 potential consumption is considerably higher. Consequently, consumption must continue to be restricted in many areas owing to the low level of mine output. The estimate of the quantity of tin likely available for 1947 consumption was set at between 140,000 and 150,000 long tons, available only by reduction in overall world stocks. Potential consumption for 1948 was estimated at about 184,000 tons and for 1949 at 190,000 tons. Table II shows potential and possible actual consumption of tin in 1947 by nation and stocks on hand Jan. 1, 1947, long tons of tin content.

The estimated stock position, 1947 through 1949, is indicated in Table II.

TABLE I—World Tin Production

Country	1947	1948	1949
Far East			
Malaya	22,000	48,000	70,000
N. E. Indies	21,000	37,000	43,000
Burma	1,000	2,000	3,000
Siam	2,000	3,000	10,000
China	4,000	6,000	8,000
Indo-China	.....	400	1,200
	50,000	96,400	135,200
Africa			
Nigeria	10,000	10,000	10,000
Belgian Congo	13,500	14,700	16,000
Others	2,000	2,000	2,000
	25,500	26,700	28,000
South America			
Bolivia	40,000	40,000	40,000
Others	1,500	1,500	1,500
	41,500	41,500	41,500
Other Countries	6,000	6,500	7,000
Total	123,000	171,100	211,700

TABLE II—World Tin Availibility

Year	Stocks, Jan. 1, Long Tons	Production, Long Tons	Available Supply, Long Tons	Consumption, Long Tons
1947	114,000	117,000	231,000	146,000
1948	85,000	163,000	248,000	184,000
1949	64,000	201,000	265,000	190,000

TABLE III—Tin Consumption Statistics in Long Tons

Country	Consumption, 1947 Potential	Consumption, 1947 Possible Actual	Stocks Jan. 1, 1947
Argentina	1,200	1,200	.....
Australia	3,000	2,400	.....
Belgium	2,700	2,600	3,000
Canada	7,490	4,500	.....
China	800	800	.....
Czechoslovakia	2,000	1,600	.....
France	12,000	9,000	.....
Germany	500	500	.....
India	6,500	5,000	.....
Italy	5,250	2,500	.....
Japan	500	500	10,000*
Malaya	.....	.....	2,000
Netherlands	2,200	2,200	2,300
N. E. Indies	.....	.....	3,000
Poland	1,200	1,200	.....
Siam	250	250	12,000
Spain	1,000	1,000	.....
Sweden	2,000	2,000	.....
Switzerland	2,700	2,400	.....
U. S. S. R.	5,000	5,000	.....
United Kingdom	30,100	27,500	20,400
United States	90,500	70,000	57,000**
Others	6,300	4,500	4,000
Total	184,000	146,000	114,000

* Ex-Japan Stocks.
** Excludes 12,000 tons of metal held by Bureau of Federal Supply and not available for consumption.

Coal Bulletin Issued

Washington

• • • **Based on detailed** microscopic studies, the complex formation of coal is discussed in a publication just issued by the Bureau of Mines entitled "What Is Coal?" Well illustrated by microphotographs, the treatise (Information Circular 7397) traces the growth and structure of vegetation involved, its decomposition, and eventual transformation into coal. It also discusses types and classifications of solid fuel.

SOFTBALL FIELD: *The caption accompanying the photograph of this huge all-welded gas holder says it is big enough to accommodate a game of soft ball—presumably before the tank is filled. When completed at Elizabeth, N. J., it will be among the world's largest all-welded gas tanks, and by like token, among the world's ugliest.*

Canadian Steel Production and Shipments

Toronto

• • • **Canadian production of primary iron and steel shapes for the month of May totaled 282,543 net tons, compared with 277,010 tons in April and 254,612 tons in May, 1946. Output in May included 74,813 tons for producers interchange, which represents the amount shipped to producers' own plants or to other plants within the primary industry for further processing. In the month under review production included 271,176 tons of carbon steel shapes and 11,367 tons of alloy steel shapes.**

Shipments of primary iron and steel shapes in May amounted to 202,681 net tons, including 191,562 tons of carbon steel shapes and 11,119 tons of alloy steel shapes; for April shipments totaled 206,682 tons, including 197,-344 tons of carbon and 9,338 tons of alloy shapes, and in May, 1946, shipments were 202,468 tons of carbon steel shapes and 7,328 tons of alloy steel shapes. The above figures which show iron and steel shapes made for sale do not include deliveries under producers interchange.

For the first 5 months of this year primary iron and steel shapes produced totaled 1,367,338 net tons including 1,320,836 tons of carbon steel shapes and 46,502 tons of alloy steel shapes which compares with 1,235,324 tons produced in the like period of 1946 when output included 1,191,909 tons of carbon steel shapes and 33,415 tons alloy steel shapes. Shipments of primary iron and steel shapes for the five months ending with May totaled 1,042,126 net tons including 997,513 tons of carbon shapes and 44,613 tons of alloy shapes and compares with total shipments of 1,011,856 tons including 980,317 tons of carbon shapes and 31,539 tons of alloy shapes, for the corresponding five months of 1946. For the five months of this year producers interchange accounted for 336,518 tons against 227,701 tons in the 1946 period. The following table shows production and shipments for sale of primary iron and steel shapes for the month of May in net tons:

May, 1947	Carbon Steel		Alloy Steel	
	Made	Shipped	Made	Shipped
Billets, etc., for forging	8,320	4,620	860	607
Other semi-finished shapes, not for re-rolling by makers	34,935	421	168	.....
Structural shapes and piling	15,838	14,064	.....	.....
Plates	19,061	19,018	1	1
Rails	14,237	15,164	.....	.....
Tie plates and track material:				
Splice bars	288	1,238	.....	.....
Tie plates	4,995	4,790	.....	.....
Spikes	1,673	1,738	.....	.....
Tool steel	87	137	203	258
Concrete reinforcing bars	5,601	6,235	.....	.....
Hot rolled bars for cold finishing	1,490	.....	.....	.....
Other hot rolled bars	43,285	36,151	8,634	8,903
Pipes and tubes	12,047	12,815	.....	.....
Wire rods	25,755	16,883	14	14
Hot rolled back sheets	26,619	16,818	.....	.....
Cold reduced black sheets	3,586	3,586	.....	.....
Galvanized sheets	7,229	7,353	.....	.....
Steel castings—By ingot makers	1,984	2,183	54	46
—By other foundries	4,344	4,351	1,358	1,195
All other shapes, including tin plate, tin mill, black plate, cold finished bars and strips etc.	39,802	23,997	75	95
TOTAL	271,176	191,562	11,367	11,119

Producers' shipments of primary iron and steel shapes, subdivided according to principal consuming industries for the month of May, in net tons follow:

Industry	Carbon steel	Alloy Steel
Automotive industries	7,066	5,754
Agricultural, including farm machinery	9,174	62
Building construction	25,966	56
Containers industry	16,908	4
Machinery and tools	12,206	616
Merchant trade products	20,458	170
Mining, lumbering, etc.	8,295	507
National defense	36	.....
Pressing, forming and stamping	14,090	40
Public works and utilities	1,280	52
Railway operating	26,228	213
Railway cars and locomotives	16,647	132
Shipbuilding	5,217	14
Miscellaneous and unclassified	718	80
Wholesalers and warehouses	25,478	191
Direct export—To British Empire	1,091	121
—To other countries	704	3,107
TOTAL SHIPPED FOR SALE	191,562	11,119
Producers' interchange	74,528	285

Canadian Iron Output Dipped a Bit in June But Daily Rate Rose

Toronto

• • • **Canadian pig iron** production for the month of June was slightly below that of May, but the daily average was up fractionally. For June, pig iron output amounted to 159,826 net tons or daily average of 70.8 pct against 160,230 tons produced in May when the daily average was 68.7 pct, and compares with output of 129,890 tons for June 1946. For the month under review output included 129,861 tons of basic iron, of which 120,758 tons were for use of producing companies and 9103 tons for sale; 21,996 tons of foundry iron, with 282 tons for further use and 21,714 tons for sale, and 7969 tons of malleable iron, all for sale. Throughout June, 11 of the 14 blast furnaces in Canada were blowing.

Following are comparative monthly production figures for pig iron and ferroalloys for 1947 in net tons:

	Pig Iron	Ferroalloys
January	177,313	9,644
February	150,632	9,357
March	164,403	14,197
April	160,749	13,015
May	160,230	15,325
June	159,826	16,212
Total 6 Months	973,153	77,750

•

Toronto

• • • **Production of steel ingots** and castings in Canada for June amounted to 238,297 net tons, or 81.7 pct of total rated capacity as compared with 244,076 tons or average of 81 pct for May, and with 214,861 tons in June 1946. Output for the month included 230,581 tons of steel ingots and 7716 tons of steel castings.

Charges to steel furnaces in June included 122,988 tons of pig iron; 64,495 tons of scrap of consumers own make and 67,540 tons of purchased scrap.

Following are comparative production figures for 1947 in net tons:

	Steel Ingots	Steel Castings
January	243,557	6241
February	223,124	6098
March	263,193	6539
April	244,998	7158
May	235,978	8098
June	230,581	7716
Total 6 Months	1,441,431	41,850

Weekly Gallup Polls . . .

AFL and CIO Members Favor Merging Into One Organization

Princeton, N. J.

• • • **Although rivalry** between CIO and AFL union leaders is bitter, and talk of a merger draws scorn from many of them, there is apparently a good deal of sentiment for a merger among the rank and file of the two unions, according to George Gallup, director, American Institute of Public Opinion.

When interviewers for the institute talked to union members included in a nationwide sampling of public opinion, they found sentiment approximately 2-to-1, among those with opinions, in favor of having the CIO and AFL patch up the break that occurred back in 1935 and join together into one labor organization.

Proposals to do this came from a number of union leaders right after the Taft-Hartley Act was passed. Walter Reuther, head of the United Automobile Workers (CIO), suggested for example that organized labor close up ranks in order to present a united front in the fight to repeal the act and to defeat members of Congress who had voted for the union regulation measure.

A recent poll shows that the chief opposition to a merger is apparently at the executive level rather than the membership level in the two unions.

Members of the AFL and CIO included in the national cross-section were polled on the following question:

"Would you like to see the AFL and the CIO join in one organization?"

The vote:

	Pct
Yes	55
No	25
No opinion	20

CIO members voted as much in favor of the merger as AFL members.

There is, however, less sentiment in favor of a merger today than there was 5 years ago. In January 1942 a poll by the institute found that 71 pct of union members polled wanted to see the two labor organizations joined together, while 22 pct were opposed and 7 pct had no opinion. That was a favorable ratio of more than 3-to-1.

It may be that the longer the organizations remain apart, the harder it will be to stir up sentiment among union members to support a merger.

•

• • • **The high cost of** living, foreign policy problems and possibility of another war are the three chief issues facing the country today, in the opinion of American voters.

From time to time institute surveys are conducted to determine what is worrying the people —what they have on their minds so far as public problems are concerned. Voters are asked:

"What do you think is the most important problem facing this country today?"

The results are as follows:

	Pct
High prices, high cost of living, inflation	24
Foreign policy, getting along with other nations, helping Europe	22
Preventing war, working out a peace	21
Strikes and labor problems	8
Housing	6
Controlling atom bomb, military preparedness	3
Communism	1
Future of the UN	1
Taxes	1
Miscellaneous	14

Some voters named more than one issue—hence the table totals more than 100 pct.

These issues differ sharply from those of a year ago in a similar poll. Last August the number of voters expressing concern over world affairs totaled only 16 pct, whereas today 47 pct name some item related to international affairs. As for purely national or domestic problems, they were named by 91 pct a year ago, and by only 54 pct today.

On nearly a dozen occasions during the past 12 years the institute has polled the nation's opinions as to what were the most vital issues facing us. The results give a profile of recent history in terms of what interested or worried us as a nation.

In 1935, when the first poll was taken, the most vital issue named by the people was one which does not turn up at all in the list today — unemployment. This remained in first place until the war clouds gathered in Europe in 1938 and 1939. Then keeping out of war became the topmost issue, in the opinion of the people.

High Living Costs, Foreign Policy and Possibility of War Vital Issues Facing Nation

• • •

During the early war days, before rationing, high prices were a major concern, and later under rationing, shortages loomed biggest in the public mind. As the war drew to a close, people began to worry most about the possibilities of postwar joblessness.

A record of the concerns of the people from 1935 to date, as shown by institute polls, follows. The issues for each year are listed in the order in which they were named by voters as the most vital facing the country.

1935—Unemployment, government economy, neutrality.

1937—Unemployment, neutrality, social security.

1939—Keeping out of war, unemployment, business recovery, labor troubles.

1943—Aside from winning the war, the chief issues were High prices, gasoline rationing, postwar problems (such as national debt, loss of jobs, taxes), the draft.

1945—Postwar jobs and business readjustment to peace, and strikes and labor troubles were named most often, aside from winning the war.

1946—High prices, food shortages, maintaining peace, strikes and labor troubles.

January 1947 — Strikes and labor problems; foreign policy problems, high prices.

Canadian Steel Production and Shipments

Toronto

• • • **Canadian production of primary iron and steel shapes for the month of May totaled 282,543 net tons, compared with 277,010 tons in April and 254,612 tons in May, 1946. Output in May included 74,813 tons for producers interchange, which represents the amount shipped to producers' own plants or to other plants within the primary industry for further processing. In the month under review production included 271,176 tons of carbon steel shapes and 11,367 tons of alloy steel shapes.**

Shipments of primary iron and steel shapes in May amounted to 202,681 net tons, including 191,562 tons of carbon steel shapes and 11,119 tons of alloy steel shapes; for April shipments totaled 206,682 tons, including 197,-344 tons of carbon and 9,338 tons of alloy shapes, and in May, 1946, shipments were 202,468 tons of carbon steel shapes and 7,328 tons of alloy steel shapes. The above figures which show iron and steel shapes made for sale do not include deliveries under producers interchange.

For the first 5 months of this year primary iron and steel shapes produced totaled 1,367,338 net tons including 1,320,836 tons of carbon steel shapes and 46,502 tons of alloy steel shapes which compares with 1,235,324 tons produced in the like period of 1946 when output included 1,191,909 tons of carbon steel shapes and 33,415 tons alloy steel shapes. Shipments of primary iron and steel shapes for the five months ending with May totaled 1,042,126 net tons including 997,513 tons of carbon shapes and 44,613 tons of alloy shapes and compares with total shipments of 1,011,856 tons including 980,317 tons of carbon shapes and 31,539 tons of alloy shapes, for the corresponding five months of 1946. For the five months of this year producers interchange accounted for 336,518 tons against 227,701 tons in the 1946 period. The following table shows production and shipments for sale of primary iron and steel shapes for the month of May in net tons:

May, 1947	Carbon Steel		Alloy Steel	
	Made	Shipped	Made	Shipped
Billets, etc., for forging	8,320	4,620	860	607
Other semi-finished shapes, not for re-rolling by makers	34,935	421	168	.....
Structural shapes and piling	15,838	14,064	.....	.....
Plates	19,061	19,018	1	1
Rails	14,237	15,164	.....	.....
Tie plates and track material:				
Solice bars	288	1,238	.....	.....
Tie plates	4,995	4,790	.....	.....
Spikes	1,673	1,738	.....	.....
Tool steel	87	137	203	258
Concrete reinforcing bars	5,601	6,235	.....	.....
Hot rolled bars for cold finishing	1,490	.....	.....	.....
Other hot rolled bars	43,285	36,151	8,634	8,903
Pipes and tubes	12,047	12,815	.....	.....
Wire rods	25,755	16,883	14	14
Hot rolled back sheets	26,619	16,818	.....	.....
Cold reduced black sheets	3,586	3,586	.....	.....
Galvanized sheets	7,229	7,353	.....	.....
Steel castings—By ingot makers	1,984	2,183	54	46
—By other foundries	4,344	4,351	1,358	1,195
All other shapes, including tin plate, tin mill, black plate, cold finished bars and strips etc.	39,802	23,997	75	95
TOTAL	271,176	191,562	11,367	11,119

Producers' shipments of primary iron and steel shapes, subdivided according to principal consuming industries for the month of May, in net tons follow:

Industry	Carbon steel	Alloy Steel
Automotive industries	7,066	5,754
Agricultural, including farm machinery	9,174	62
Building construction	25,966	56
Containers industry	16,908	4
Machinery and tools	12,206	616
Merchant trade products	20,458	170
Mining, lumbering, etc.	8,295	507
National defense	36	.....
Pressing, forming and stamping	14,090	40
Public works and utilities	1,280	52
Railway operating	26,228	213
Railway cars and locomotives	16,647	132
Shipbuilding	5,217	14
Miscellaneous and unclassified	718	80
Wholesalers and warehouses	25,478	191
Direct export—To British Empire	1,091	121
—To other countries	704	3,107
TOTAL SHIPPED FOR SALE	191,562	11,119
Producers' interchange	74,528	285

Canadian Iron Output Dipped a Bit in June But Daily Rate Rose

Toronto

• • • **Canadian pig iron** production for the month of June was slightly below that of May, but the daily average was up fractionally. For June, pig iron output amounted to 159,826 net tons or daily average of 70.8 pct against 160,230 tons produced in May when the daily average was 68.7 pct, and compares with output of 129,890 tons for June 1946. For the month under review output included 129,861 tons of basic iron, of which 120,758 tons were for use of producing companies and 9103 tons for sale; 21,996 tons of foundry iron, with 282 tons for further use and 21,714 tons for sale, and 7969 tons of malleable iron, all for sale. Throughout June, 11 of the 14 blast furnaces in Canada were blowing.

Following are comparative monthly production figures for pig iron and ferroalloys for 1947 in net tons:

	Pig Iron	Ferroalloys
January	177,313	9,644
February	150,632	9,357
March	164,403	14,197
April	160,749	13,015
May	160,230	15,325
June	159,826	16,212
Total 6 Months	973,153	77,750

•

Toronto

• • • **Production of steel ingots** and castings in Canada for June amounted to 238,297 net tons, or 81.7 pct of total rated capacity as compared with 244,076 tons or average of 81 pct for May, and with 214,861 tons in June 1946. Output for the month included 230,581 tons of steel ingots and 7716 tons of steel castings.

Charges to steel furnaces in June included 122,988 tons of pig iron; 64,495 tons of scrap of consumers own make and 67,540 tons of purchased scrap.

Following are comparative production figures for 1947 in net tons:

	Steel Ingots	Steel Castings
January	243,557	6241
February	223,124	6098
March	263,193	6539
April	244,998	7158
May	235,978	8098
June	230,581	7716
Total 6 Months	1,441,431	41,850

Weekly Gallup Polls . . .

AFL and CIO Members Favor Merging Into One Organization

Princeton, N. J.

• • • **Although rivalry** between CIO and AFL union leaders is bitter, and talk of a merger draws scorn from many of them, there is apparently a good deal of sentiment for a merger among the rank and file of the two unions, according to George Gallup, director, American Institute of Public Opinion.

When interviewers for the institute talked to union members included in a nationwide sampling of public opinion, they found sentiment approximately 2-to-1, among those with opinions, in favor of having the CIO and AFL patch up the break that occurred back in 1935 and join together into one labor organization.

Proposals to do this came from a number of union leaders right after the Taft-Hartley Act was passed. Walter Reuther, head of the United Automobile Workers (CIO), suggested for example that organized labor close up ranks in order to present a united front in the fight to repeal the act and to defeat members of Congress who had voted for the union regulation measure.

A recent poll shows that the chief opposition to a merger is apparently at the executive level rather than the membership level in the two unions.

Members of the AFL and CIO included in the national cross-section were polled on the following question:

"Would you like to see the AFL and the CIO join in one organization?"

The vote:

	Pct
Yes	55
No	25
No opinion	20

CIO members voted as much in favor of the merger as AFL members.

There is, however, less sentiment in favor of a merger today than there was 5 years ago. In January 1942 a poll by the institute found that 71 pct of union members polled wanted to see the two labor organizations joined together, while 22 pct were opposed and 7 pct had no opinion. That was a favorable ratio of more than 3-to-1.

It may be that the longer the organizations remain apart, the harder it will be to stir up sentiment among union members to support a merger.

•

• • • **The high cost of** living, foreign policy problems and possibility of another war are the three chief issues facing the country today, in the opinion of American voters.

From time to time institute surveys are conducted to determine what is worrying the people —what they have on their minds so far as public problems are concerned. Voters are asked:

"What do you think is the most important problem facing this country today?"

The results are as follows:

	Pct
High prices, high cost of living, inflation	24
Foreign policy, getting along with other nations, helping Europe	22
Preventing war, working out a peace	21
Strikes and labor problems	8
Housing	6
Controlling atom bomb, military preparedness	3
Communism	1
Future of the UN	1
Taxes	1
Miscellaneous	14

Some voters named more than one issue—hence the table totals more than 100 pct.

These issues differ sharply from those of a year ago in a similar poll. Last August the number of voters expressing concern over world affairs totaled only 16 pct, whereas today 47 pct name some item related to international affairs. As for purely national or domestic problems, they were named by 91 pct a year ago, and by only 54 pct today.

On nearly a dozen occasions during the past 12 years the institute has polled the nation's opinions as to what were the most vital issues facing us. The results give a profile of recent history in terms of what interested or worried us as a nation.

In 1935, when the first poll was

High Living Costs, Foreign Policy and Possibility of War Vital Issues Facing Nation

o o o

taken, the most vital issue named by the people was one which does not turn up at all in the list today — unemployment. This remained in first place until the war clouds gathered in Europe in 1938 and 1939. Then keeping out of war became the topmost issue, in the opinion of the people.

During the early war days, before rationing, high prices were a major concern, and later under rationing, shortages loomed biggest in the public mind. As the war drew to a close, people began to worry most about the possibilities of postwar joblessness.

A record of the concerns of the people from 1935 to date, as shown by institute polls, follows. The issues for each year are listed in the order in which they were named by voters as the most vital facing the country.

1935—Unemployment, government economy, neutrality.

1937—Unemployment, neutrality, social security.

1939—Keeping out of war, unemployment, business recovery, labor troubles.

1943—Aside from winning the war, the chief issues were High prices, gasoline rationing, postwar problems (such as national debt, loss of jobs, taxes), the draft.

1945—Postwar jobs and business readjustment to peace, and strikes and labor troubles were named most often, aside from winning the war.

1946—High prices, food shortages, maintaining peace, strikes and labor troubles.

January 1947 — Strikes and labor problems; foreign policy problems, high prices.

Steel Executives At Meeting Promise To Assist in Germany

Washington

• • • **Assurance of** steel industry cooperation in a program to provide a comparatively small tonnage of semi-finished steel to Germany for repairs to mining equipment and related transportation services was given to Secretary of War Kenneth C. Royall at a luncheon meeting last week. Leading steel company executives attended, in addition to officials from other government departments.

The question is still in a discussion stage and a firm tonnage figure of German needs was not arrived at during the meeting. However, THE IRON AGE learned that the tonnages discussed were well below the 600,000 ton figure for 6 months erroneously reported in the press about two weeks ago.

When a firm figure is set the steel industry will analyze German needs and break down the total tonnage product-wise.

At the meeting, industry representatives pointed out that while they were willing to cooperate, any tonnages supplied to Germany would be at the expense of domestic consumers due to the continued heavy demand in this country.

The domestic scrap situation was also discussed, and the Advisory Scrap Committee previously appointed by Secretary Royall will be requested to consider carefully the best methods of promptly procuring additional scrap from available surplus materials.

Industry representatives who attended the luncheon were: Admiral Ben Moreell and A. J. Hazlett of Jones & Laughlin; David F. Austin, U. S. Steel; Paul Mackall, Bethlehem; Charles White, Republic; W. E. Watson, Youngstown Sheet & Tube; Thomas E. Millsop, National Steel, and Wilbur Mace, Allegheny-Ludlum.

Government representatives present were: Willard L. Thorp, Assistant Secretary of State; Charles E. Saltzman, Assistant Secretary of State; William C. Foster, Under Secretary of Commerce; David K. E. Bruce, Assistant Secretary of Commerce, and James Boyd, Dept. of Interior.

Army officials included Tracy Voorhees, Special Assistant to the Secretary of War; Maj. Gen W. H. Draper, Jr., economic adviser to General Clay in Europe; Brig. Gen. G. L. Eberle, Max Forester, Col. H. L. Berno, Col. W. C. Baker, Jr., and Lt. Col. D. D. Ferriss.

Coming Events

Sept. 1-4 American Society of Mechanical Engineers, fall meeting, Salt Lake City.

Sept. 8-12 Instrument Society of America, conference, Chicago.

Sept. 10-11 Porcelain Enamel Institute, ninth annual forum, Columbus, Ohio.

Sept. 17-26 National Machine Tool Builders' Assn., machine tool show, Dodge-Chicago Plant, Chicago.

Sept. 18-20 Foundry Equipment Manufacturers Assn., annual meeting, Hot Springs, Va.

Sept. 18-20 National Assn. of Foremen, annual convention, Los Angeles.

Sept. 22-25 Assn. of Iron & Steel Engineers, annual meeting, Pittsburgh.

Oct. 2-3 Gray Iron Founders' Society, annual convention, Milwaukee.

Oct. 2-4 Society of Automotive Engineers, aeronautics meeting, Los Angeles.

Oct. 6-7 Packaging Machinery Manufacturers Institute, annual meeting, Springfield, Mass.

Oct. 6-8 American Gas Assn., annual convention, Cleveland.

Oct. 9-10 Porcelain Enamel Institute, annual meeting, Cleveland.

Oct. 16-17 National Conference on Industrial Hydraulics (formerly Hydraulics Machinery Conference), annual meeting, Chicago.

Oct. 18-24 National Metal Exposition, Chicago.

Oct. 30-Nov. 1 American Society of Tool Engineers, semiannual meeting, Boston.

Oct. 31 Illinois Mining Institute, annual meeting, Springfield, Ill.

Nov. 7-8 Annual Conference on X-Ray and Electron Diffraction, Mellon Institute of Industrial Research, Pittsburgh.

Unions Ordered To Register by NLRB

Washington

• • • **Unions having** pending cases before the National Labor Relations Board were given 20 days' notice by NLRB last week to meet registration and non-Communist affidavit requirements of the Taft-Hartley labor law.

About 3000 cases pending in NLRB regional offices are affected by the registration requirements, according to Robert N. Denham, NLRB chief counsel. NLRB, he stated, will take no further action during the 20-day period unless compliance is accomplished sooner.

If filing requirements are not completed in 20 days from receipt of the notification letter sent by regional NLRB offices, the case of the union in question will be dismissed.

The same policy of dismissal will be followed on union charges of unfair labor practices filed before Aug. 22 and employers' petitions for election, unless both unions comply with filing requirements.

Battelle Institute Names Six Assistant Directors

Columbus, Ohio

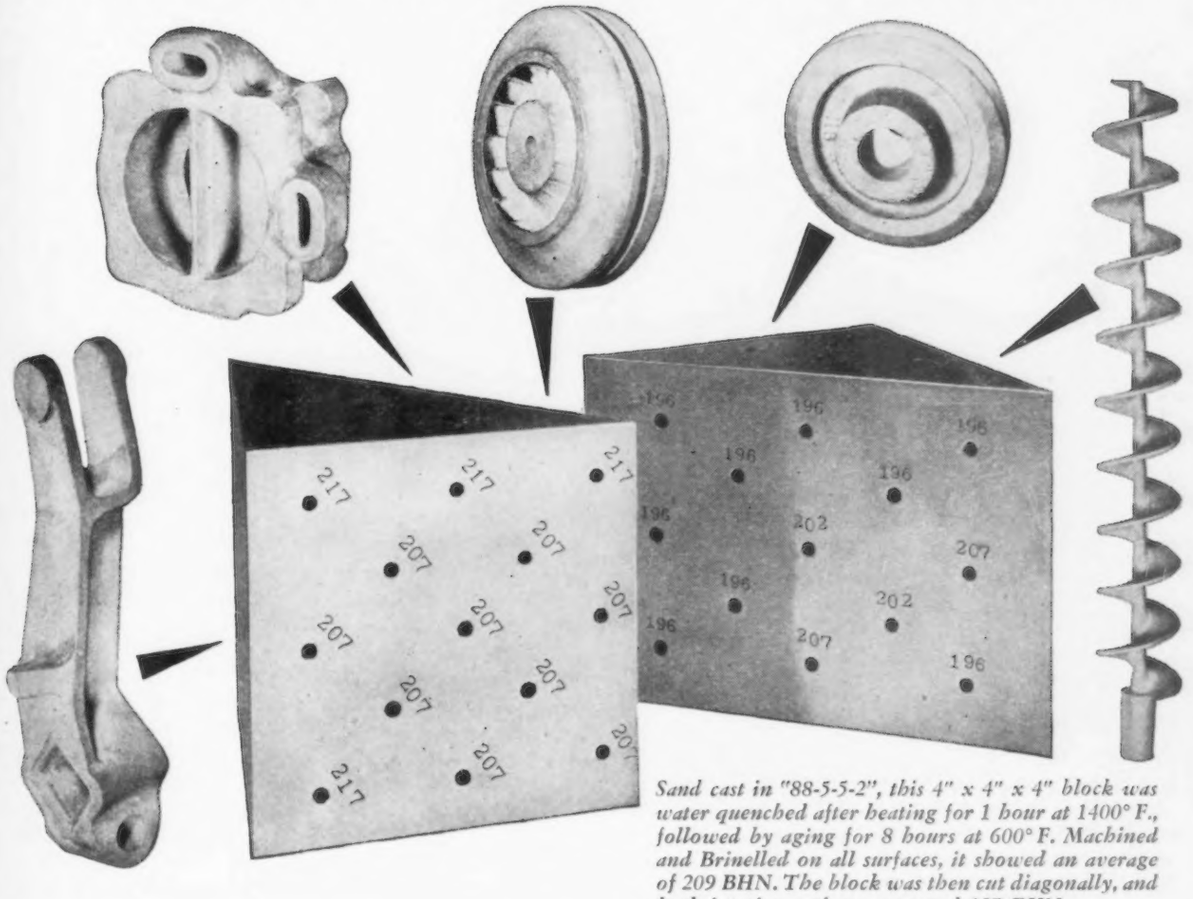
• • • **To assure that** the full talents of its growing staff will continue to be used on each and every industrial problem, Battelle Institute has named six new assistant directors.

The new assistant directors—all veteran members of the Battelle staff—are Dr. Frank C. Croxton, Dr. Clarence H. Lorig, Dr. Howard W. Russell, Ralph A. Sherman, Clarence E. Sims, and John D. Sullivan. The new assistant directors will share with director Williams and Dr. Oscar E. Harder, assistant director since 1930, in the technical direction of Battelle research. Under the Battelle plan, administrative matters are handled by the director and four assistants to the director. The assistant directors are the top coordinators of technology. In addition, a body of technical advisers, headed by Dr. Horace W. Gillett, chief technical adviser, provides specialized consultation and guidance on all research projects.

AN AGE-HARDENABLE

NICKEL-BRONZE

DEVELOPED FOR HEAVY DUTY SERVICE



Sand cast in "88-5-5-2", this 4" x 4" x 4" block was water quenched after heating for 1 hour at 1400° F., followed by aging for 8 hours at 600° F. Machined and Brinelled on all surfaces, it showed an average of 209 BHN. The block was then cut diagonally, and both interior surfaces averaged 197 BHN.

Specify "88-5-5-2" (Copper-Tin-Nickel-Zinc) where you want corrosion-resistant bronze castings with extremely high mechanical properties.

This alloy in the "as-cast" condition serves the same purposes as "G" Bronze, but that's not the whole story.

The excellent physical properties of "88-5-5-2" may be immensely improved by heat treating . . . as exemplified by the block shown above.

The Nickel content provides the age-hardening response which increases both tensile and compressive strength, being particularly effective in raising the elastic properties. Nickel also increases fluidity in the casting mixture, thus affording a widened casting range that helps to minimize misruns and improves density and pressure-tightness.

This age-hardening Nickel-bronze meets wide demands. Philadelphia Bronze and Brass Corp., maker of the parts illustrated, produces "88-5-5-2" castings that range in size from ½" x 12" bars to parts weighing over 500 pounds.

EMBLEM OF INCO SERVICE
TRADE MARK

Over the years, International Nickel has accumulated a fund of useful information on the selection, fabrication, treatment and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes and other alloys containing Nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

Exports From Britain Recover After Power Shortage Cuts Total

London

• • • **Exports of iron** and steel from Britain were high in the second quarter of last year and declined subsequently, but last quarter saw a recovery practically up to the figure of the fourth quarter of last year and the prewar average.

Compared with the fourth quarter there was a marked reduction for crude iron and steel and a rise of 12,000 (long) tons for finished iron and steel goods; rolling mill products showed no substantial change, but remained well above the prewar figure, whereas exports of finished goods were 9 pct below the 1938 average. Exports of railway material and galvanized sheets were high in relation to the fourth quarter and those of wrought tubes and hollow-ware low, though the quantity of hollow-ware exported was still more than four times the prewar average.

Iron and steel figures published by the British Board of Trade are shown in Table I.

The quantity of machinery exported has been practically the same in each of the past three quarters, at 43 pct more than in 1938. Exports of machine tools, more than double those in 1938, were the highest on record. Those of agricultural machinery were nearly three times the prewar figure, and of cranes and hoists twice, and boilers and boiler-house plant also showed a rise above the average.

The average was reduced by textile machinery, which alone among the principal classes failed to reach its prewar average. British India ($47 million), the Soviet Union ($32 million), the Union of South Africa ($25 million) and Australia ($16.8 million) have so far this year been Britain's largest markets. Machinery export totals are presented in Table II.

Exports of aluminum and aluminum manufactured goods, which had risen rapidly up to the end of last year, suffered a setback last quarter, but were nevertheless still nearly six times the 1938 average. Exports of brass and brass goods declined further, but those of copper and copper products recovered from the fall in the first quarter. In each case the quantity exported was more than double the prewar figure. The number of radio sets exported showed a further small decline, being 100,000 against 137,000 in the fourth quarter of 1946, but exports last quarter were larger than in the whole of any year before the war.

Exports of automobiles reached the record total of 28,229—an increase of 1204 on the previous best in the fourth quarter and two and a half times the 1938 average. The increase since the end of the war has been continuous, apart from the setback caused by the fuel

TABLE I

Iron and Steel Exports from the U. K.

	Quantity				Value
	Quarterly average 1938	Fourth Quarter 1946	First Quarter 1947	Second Quarter 1947	Second Quarter 1947
		Thousand long tons			$ million (approx.)
Crude iron and steel	34	48	35	29	5.6
Bars and rods	26	48	39	38	4.0
Uncoated plates and sheets	53	57	50	58	6.8
Other rolling-mill products	34	37	40	48	4.8
Total rolling-mill products	113	142	129	144	15.6
Tinned plates	82	32	37	36	7.2
Tubes, wrought	55	78	60	57	10.8
Railway material	40	29	39	46	4.4
Wire and wire manufactures	21	28	27	25	6.8
Hollow-ware	3	23	15	13	4.0
Other goods	131	99	103	124	27.2
Total finished iron and steel goods	332	289	281	301	60.4
United Kingdom exports of iron and steel and manufactures thereof	479	479	445	474	81.6

For permanent installations in homes, apartments, public buildings, factories and power stations J&L Pipe is designed to give long, uniform service. Every length is made of J&L Controlled Quality Steel.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PENNSYLVANIA

shortage in the first quarter of this year. Exports in May and June averaged about 10,500, but this is considerably below the present rate of production for export, which in June was nearly 14,000 (including chassis). All other road vehicles were below the fourth quarter but in every case well above the 1938 figures.

Mostly the figures were also below those for the first quarter, showing the continuing effects of the interruption of production; the manufacturers' figures show that the number of trucks and buses now being produced for export is only slightly less than in the fourth quarter of last year. The effect of the fuel shortage on pedal cycles was not so serious as for motor vehicles and last quarter's export figure was only just below the record figure for the fourth quarter of 1946—nearly two and half times the 1938 average.

Exports of locomotives and railroad cars were twice and one-third higher respectively than the prewar figure but both were below the fourth quarter of last year. The tonnage of new ships exported reached the highest figure since 1939 and was only 6 pct under the 1938 average after being about 30 pct lower in the preceding two quarters.

Exports of complete aircraft numbered 485, valued at $14.8 million, by far the highest figures ever recorded, while exports of engines and other parts brought the total figure to $24 million.

TABLE II
Total U. K. Machinery Exports

Machinery	Quantity				Value
	Quarterly average 1938	Fourth Quarter 1946	First Quarter 1947	Second Quarter 1947	Second Quarter 1947
		Thousand tons			$ million (approx.)
Electrical machinery	11.2	14.6	16.2	16.0	20.8
Textile machinery	17.7	17.4	18.9	16.6	20.0
Machine tools (metal working)	6.0	11.7	11.4	13.1	14.4
Boilers and boiler-house plant	14.0	17.1	24.8	20.7	12.0
Primemovers (not electrical)	7.1	10.7	10.6	9.3	11.2
Agricultural machinery	4.6	15.9	12.7	13.2	7.6
Cranes and hoists	4.8	12.8	8.5	9.6	6.0
Other machinery	49.4	63.0	63.0	65.9	74.4
Total	114.8	163.2	166.1	164.4	166.4

TABLE III
U. K. Exports of Miscellaneous Metal Goods

Products	Quantity				Value
	Quarterly average 1938	Fourth Quarter 1946	First Quarter 1947	Second Quarter 1947	Second Quarter 1947
		Thousand cwts.			$ million (approx.)
Aluminum and aluminum manufactures	32	209	211	186	7.2
Brass and brass manufactures	108	393	280	267	9.2
Copper and copper manufactures	162	348	282	347	10.0
		Thousand tons			
Electric wires and cables	....	18.8	15.9	17.7	11.6
		Thousand			
Radio sets	21.2	136.9	106.6	99.9	4.4
		Number			
Passenger cars	11,031	27,025	22,631	28,229	30.8
Commercial vehicles	846	6,705	5,408	5,463	8.8
Chassis for commercial vehicles	2,722	8,907	6,484	5,790	12.4
Motor cycles	4,942	14,547	12,534	12,505	3.6
		Thousand			
Pedal cycles	144	339	321	334	9.2
		Thousand tons			
Railway rolling stock:					
Locomotives and parts	6.0	19.4	10.3	11.8	9.2
Freight cars (including parts)	12.4	25.5	22.3	16.4	4.8
Wheels and axles	11.1	17.3	15.9	17.5	2.8
		Thousand gross ton			
Ships (excluding war vessels)	47	34	33	44	14.8

Steel Men Invited To Make Statements Before Committee

Washington

• • • **Steel management's answers** to consumers' howls of shortages are scheduled to be aired on Sept. 12 before the Steel Subcommittee of the Senate Small Business Committee.

Senator Martin, R., Pa., subcommittee chairman, last week invited representatives of 11 leading producers to meet on Capitol Hill for a "frank and open discussion of steel supply and distribution problems."

In two months of hearings the subcommittee has heard complaints of dozens of steel consumers, economists and labor officials as to current and prospective effects on business of the present scarcity. Senator Martin now concludes the time has come to ask producers what they think can be done about the shortage.

"We have reached the point in our investigation where we must now ask for a frank and open discussion of these steel supply and distribution problems with the members of the steel-producing community and seek, through their cooperation, to correct and improve certain conditions," Senator Martin wrote the producers.

Six subjects of investigation developed by the subcommittee will be laid before the producers, according to Senator Martin. These subjects are: (1) Gray markets, (2) historical quota distribution, (3) vertical and horizontal integration, (4) exports, (5) scrap, (6) production and capacity studies.

Steel company executives invited to Senator Martin's conference include the following: Benjamin F. Fairless, United States Steel; Eugene Grace, Bethlehem Steel; Tom M. Girdler, Republic Steel; Admiral Ben Moreell, Jones & Laughlin Steel; Frank Purnell, Youngstown Sheet and Tube; Ernest R. Weir, National Steel Corp.; Wilfred Sykes, Inland Steel; Henry Roemer, Sharon Steel Corp.; Charles R. Hook, American Rolling Mill Co.; Archie J. McFarland, Wheeling Steel, and Hiland G. Batcheller, Allegheny-Ludlam Steel Corp.

Philip Murray, president of the

CIO and the steelworkers' union, and Otis Brubaker, steelworkers' research director, are scheduled to testify before the subcommittee on Sept. 11. William Green, AFL president, has been invited to testify on the same date. The union representatives are preparing arguments similar to those recently presented to the subcommittee by Walter Reuther, United Automobile Workers chief.

Mr. Reuther thinks the Federal Government should take steps to increase steel-making capacity if the industry does not "equip itself to produce the steel required for full employment" (THE IRON AGE, July 31, p. 98).

Japanese Ferroalloy Industry Surveyed

Washington

• • • **The Japanese** ferroalloy industry, resumed on a limited scale in 1946 after closing down at the time of the surrender, is described in a Bureau of Mines publication, "Ferroalloy Metallurgy of Japan," issued as a supplement to its monthly Mineral Trade Notes. It also gives some data on the industry in Korea.

Prepared by a Bureau metallurgist, John D. Bardhill, the 52-page report reveals wide information on Japanese mineral resources used in ferroalloy production, metallurgical practices, operating methods and equipment, and available stocks on hand.

Although deficient in iron ores and other mineral resources, the report states, Japan managed to establish an important iron and steel industry in the 12-year period between 1931 and 1943. Production of special and ferroalloys was a necessary part of the newly established industry and was expanded until 1940-42 when ferroalloy production reached a peak of 144,000 metric tons.

During this peak period, it was found, about 85 plants using more than 340 electric furnaces were smelting 14 different basic ferroalloys. Steel ingot production increased from the 1.9 million tons in 1931 to a high of 8 million in 1943.

Decline of the ferroalloy industry began in 1942 and was climaxed with the closing of all plants with the surrender.

June Exports Decline; Imports Up Slightly

Washington

• • • **America's June** exports of all types except crude materials declined over the previous month but at the same time a small increase in imports was registered, according to the Census Bureau.

Exports during June dropped from the May figure of $1.4 billion to $1.2 billion; imports rose from the May figure of $455 million to $472 million in June.

The reduction in exports was particularly noticeable for all classes of machinery, automobiles and other vehicles. Foreign shipments of passenger cars fell from 27,906 units in May to 21,399 in June and trucks, from 31,266 to 21,399 units.

Value of iron and steel semi-manufactured exports were reduced from $42.6 million in May to $38 million during June; at the same time, exports of copper ingots, billets, plates, rods, etc., rose from 11,327 tons to 14,905.

During the sixth month, coal retained its position as the major dollar commodity although June shipments fell from the 8.4 million ton figure to 8.2 million tons.

Oxygen Highlighted At AISE Annual Meeting

Pittsburgh

• • • **The Association of Iron & Steel Engineers** will hold its annual technical meeting at the William Penn Hotel, Pittsburgh, from Sept. 22 through 25. The sessions planned cover the range of steel plant operations and will undoubtedly discuss new developments that are taking place in melting and rolling practices.

Three sessions are planned on combustion, which will include four papers on the use of oxygen in iron and steel making. These papers will be presented by representatives of Carnegie-Illinois Steel Corp., Republic Steel Corp., Linde Air Products Co., and Air Products Co.

Other sessions include: 2 on lubrication; 1 on rolling mills and rolling practice; 3 on electrical equipment; 2 on operating practice and procedure; a mechanical session and one on the association's standardization plans.

Steel Safety Record Shows Accident Rate Is Declining Steadily

New York

• • • **In 1946 the** steel industry continued to improve its safety record, according to the American Iron & Steel Institute. It reduced its accident frequency rate as computed by the National Safety Council, to 7.19 accident per million man-hr, the lowest point in the past 5 years, representing an improvement of 11 pct from the wartime figure of 8.1 accidents per million man-hr in 1944. In 1945 the rate was 7.23 accidents per million man-hr, and in both 1942 and 1943 it was 7.4 per million man-hr.

The steel industry's accident frequency rate last year was 46 pct better than the average of 13.4 for all industries in 1946. The overall average registered a 2 pct improvement, according to the National Safety Council.

The general improvement in reducing accident frequencies among the 40 major industries covered by the National Safety Council reports resulted in the steel industry dropping down one notch among the leading industries. In 1946 the steel industry was the fifth safest from the standpoint of accident frequency, whereas in 1945 it was the fourth safest.

The industries ranking as safer than the steel industry in 1946 were, in order, communications, aircraft manufacturing, tobacco, and glass. Over the past 10 years, the industry's safety standing has never fallen below fifth place, and has stood in third place in 4 years and in fourth place in 3 years.

The 1946 safety record was achieved in a year of widely fluctuating operations, with numerous furnaces having to be shut down or banked for various periods of time, and then started up again, with unusual steps being taken to overcome scrap shortages, and with certain rolling mills, particularly those rolling sheet and strip, operating under forced draft when not made idle by strikes.

Research Institute Attacking Problem Of Phosphorus in Iron

Birmingham

• • • **The Southern Research** Institute here has underway a project to counteract the effect of phosphorus in Southern pig iron with possible broader new markets for that product.

The project is being sponsored by H. A. Berg, president of Woodward Iron Co., who described its purpose as follows:

"It has long been recognized that the presence of phosphorus in gray cast iron to the extent normally occurring in Southern pig iron has pronounced effects upon the fluidity of the molten metal and upon the abrasion resistance and machinability of the finished castings.

"For some applications, the relatively large amount of hard wear-resisting phosphide constituent in Southern iron produces a bearing structure superior to that of low phosphorus iron.

"On the other hand, whenever high-phosphorus castings must be machined at high cutting speeds on semi-automatic machines, the hard wear-resisting phosphide causes a reduction in tool life and poses difficult machining problems.

"The research problem on which Woodward has retained the Southern Research Institute is to find a method on improving the machinability of Southern pig iron and its adaptation to those operations where machinability is of prime importance.

"Relatively poor machinability has hindered the universal acceptance of castings, produced solely from Southern pig iron, by the automotive industries and other large volume consumers.

"Improvement of its machinability would open these now closed markets to Southern iron, and improve the economic status of the South's iron industry by broadening the scope of application of Southern iron to many diversified products.

"While the Woodward research project is still in its early stage, we are greatly pleased with progress made and most hopeful of solution of the problem."

Chancellor Hutchins Admits Chicago U. Is Nucleonic Leader

Chicago

• • • **The University of** Chicago now has nuclear studies under way to determine why steel is only one tenth as strong as the atomic theory indicates it should be. According to Chancellor Robert M. Hutchins of the university, this study is only one part of a broad program of nuclear research that has 75 pct of the nation's top scientists who are experienced in the controlled utilization of nuclear energy now working on projects directed by the University of Chicago.

In the same breath Dr. Hutchins predicts the industrial and perhaps domestic use of atomic energy will be developed faster than was television (over twenty years—Editor). Dr. Hutchins declared that the university's leadership in the field of atomic science has motivated an unprecedented $12 million gamble. He said, "Trustees and officers have agreed to spend $12 million of the university's funds for construction and new equipment as our stake in the worldwide race for mastery of the atom." Problems being attacked in the institutes set up to carry on atomic research range from new concepts of the solar system to cures for cancer. All of them, Mr. Hutchins said, are concerned with the eternal "why."

For example, he pointed out that medical science would like to know why cancer cells divide and redivide at such a prodigious rate. He said, "If we can discover why, we will be a step along the road to a cure."

"According to atomic theory, steel should be at least 10 times as strong as it actually is," Dr. Hutchins said. "The value to industry and society in answering that 'why' is obvious. Similar experiments are being conducted with aluminum, magnesium, copper and other metals." The chancellor said that some of the most important research at the university concerns the investigation of superconductivity at the Institute of Metals. "Metallurgists," Dr. Hutchins said, "have found that wire when reduced to very low temperatures, loses virtually all its resistance to electricity. We want to know why." If that question could be answered, he continued, and it would be possible to then make the same phenomenon occur at normal temperatures, it would be the most exciting advance in the transmission of electric power since the invention of alternating current.

Dr. Hutchins said salaries and operating costs of the Institutes in Nucleonics now cost the university $1,500,000 a year. The cost is expected to climb to $2,500,000 a year when the institutes reach their peak. Work is now under way west of Stagg Field on the $1,250,000 accelerator building which will house the university's small cyclotron, plus a new $400,000 betatron and the $1,700,000 cyclotron which will be more powerful than any now in use. Adjacent to the accelerator building will be a $7 million office and laboratory building which will house all three of the institutes.

Dr. Hutchins said the university had committed itself to the program of nuclear research "because we feel that in a society which believes in private enterprise, as opposed to authoritarian control, the responsibility for the development of science rests upon those who can afford to pay for it. This is the price democracy and private enterprise must pay if they are to survive," he declared.

To Place Drum Order

Washington

• • • **Orders for nearly** $1,360,000 worth of 16-gage, 55-gal steel drums are to be placed under a War Dept. directive authorizing advertisement for bids on a total of 205,884 container.

Bids are to be asked for three lots, packed and marked for overseas shipment. One lot totaling 75,000 is to be shipped to Stockton, Calif., for the West Coast; a second 75,000 is to be sent to Schenectady for the East Coast, and the remaining 55,884 is to be delivered to San Antonio for the Gulf area.

At the same time, the Army will purchase 10,852 drum wrenches and 2 million drum plugs at a total estimated cost of $415,000.

Industrial Briefs . . .

• POWDER METALLURGY — The powder metallurgy firm of Patch & Talmage has been dissolved. Earl S. Patch now heads Co-press Corp., makers of powdered metal parts, Wilton, Conn. Robert Talmage is now acting as a consultant in the application of powder metallurgy in manufacturing plants. He is located at Silvermine Mill Road, Norwalk, Conn., and expects to open a metal powder laboratory in the near future.

• PLANT FOR SALE—A modern five story industrial plant at Prospect and Kenilworth Ave., Milwaukee, is being offered for sale or lease by WAA. The building, of concrete and brick construction, is suitable for use as a light manufacturing plant or for warehousing purposes. Containing 405,181 sq ft of floor space, the building consists of a productive area of 334,699 sq ft, boiler and transformer rooms, office, hospital, and personnel rooms, a cafeteria and change rooms with facilities for 2600 employees. It is situated on 2.06 acres of land and is served by two sidings of the Chicago & North Western Ry. Fair value of the property, which cost the government approximately $2 million, has been set at $873,000.

• DISTRIBUTOR—A. L. Holcomb Co., 15 Market Ave., N.W., Grand Rapids 2, has been appointed distributor for Carboloy Co., Inc. Holcomb Co. handles cutting tools, abrasives, saws and industrial supplies.

• NEW WIRE PLANT—Number 28 to the growing manufacturing plants of The Electric Auto-Lite Co. will soon be under construction at Hazleton, Pa. The new plant, covering hundreds of thousands of square feet, will be utilized to manufacture automotive wire and cable.

• TOOL FIRM SOLD—U. S. Drill Head Co. of Cincinnati has announced that it has sold its associate company, The U. S. Machine Tool Co. to the N. Ransohoff Co. of that city. Specializing in the manufacture of anti-friction bearings, hand feed milling machines, the machine tool company was sold with its entire inventory and fixtures.

• NEW BRANCH OFFICES—The Johnson Bronze Co., New Castle, Pa., has announced the opening of two new sales offices and warehouses. One will be located at 1513 Guilford Ave., Baltimore, and the other at 1044-46 Broadway, Denver.

• AUTOMATIC PLATING PLANT—As a major factor in its post-war expansion program, Pontiac Motor Div. has completed and placed in operation one of the largest, fully automatic chromium plating plants in the world. The new plant occupies 33,000 sq ft. In operation, parts brought in by conveyer from the adjacent press shop first go to the automatic polishing and buffing machines for initial polishing. Hand polishing machines apply the final touches. The parts are then suspended on the main conveyer line to enter the plating operation.

• SALES REPRESENTATIVES—O. S. Williamson, V. E. Bertramson, 515 Andrus Bldg., Minneapolis, have been appointed sales representatives for Minnesota and North Dakota by Titan Metal Mfg. Co., Bellefonte, Pa., manufacturers of brass and bronze rod, forgings, die castings and welding rods.

• EXPANSION PROGRAM—Simpson's Jumbo Steel Products Co. now located in Azusa, Calif., formerly known as Simpson Steel Co., is proceeding with a $50,000 expansion program at its new plant there. Included in the program are additions to the present manufacturing buildings.

• WORLDWIDE DISTRIBUTOR—To facilitate worldwide distribution of its precision ball bearings, Jack & Heintz Precision Industries, Inc., Cleveland, has engaged the sales and service organization of Ahlberg Bearing Co., Chicago, to represent the Jack & Heintz Ball Bearing Div.

Building Materials Output Declines In June But Cement Up

Washington

• • • **Production of most** building materials declined in June, the Commerce Dept. reported last week. However, gains in output were recorded for concrete reinforcing bars, rigid steel conduit, mechanical stokers, cement, brick, gypsum board and lath.

A gain of 25.5 points in cement output in the department's index of 19 selected construction materials was not sufficient to offset declines registered by 13 other commodities. The composite index dropped .5 points from the May figure of 137.9.

Output of four building materials—lumber, structural clay tile, mechanical stokers and range boilers—was lower in June of this year than the same period last year. The month's composite index was 8 points above that for June 1946, however.

Production fell off for such materials as lumber, cast iron products, structural clay tile, clay sewer pipe, asphalt roofing, fabricated structural steel, wire nails and staples, warm air furnaces, water heaters and range boilers.

Kinzel Is Campbell Speaker

Cleveland

• • • **American Society** for Metals announces that the Campbell Memorial Lecture will be given this year at the ASM meeting in Chicago by Albert B. Kinzel, vice-president, Union Carbide & Carbon Corp.'s research laboratory and Electro-Metallurgical Co. His subject will deal with specialized phases of weldability and welding of structural steel.

Technical Bodies Meet

Cleveland

• • • **The Third Annual** Symposium on Modern Metal Protection, sponsored jointly by Cleveland sections of The American Chemical Society, The Electrochemical Society, and The American Institute of Chemical Engineers, will be held here Sept. 27.

The session will be devoted primarily to papers on the causes and prevention of corrosion.

Construction Steel . . .

New York

• • • **The estimated total** bookings of fabricated structural steel for July, according to reports received by the American Institute of Steel Construction, Inc., amounted to 150,260 tons, an increase of 45.5 pct over the bookings of the preceding month. The bookings for the first 7 months of the year amounted to 908,313 tons, a gain of 7.7 pct over the 843,752 tons booked in the same months in the averaged 5 prewar years 1936 to 1940.

Shipments for the month of July, reported at 156,102 tons, showed an increase of 22.5 pct over the same month in the 5 prewar years, while shipments for the 7 months were 29.3 pct greater than for the same months in the prewar years.

The tonnage available for fabrication as of July 31 was 660,919 tons.

Following is the complete tabulation of bookings and shipments:

	Estimated Total Tonnage for the Entire Industry 1947	Estimated Total Tonnage for the Entire Industry Av. 1936-1940
Contracts Closed		
January	104,973	107,578
February	125,881	96,280
March	149,634	124,558
April	161,338*	110,783
May	112,954*	126,237
June	103,273*	125,835
July	150,260	152,481
Total	908,313	843,752
Shipments		
January	140,650	92,578
February	136,126	88,626
March	137,799	115,031
April	157,392*	123,650
May	154,980*	123,225
June	151,882*	129,969
July	156,102	127,422
Totals	1,034,931	800,501
Tonnage available for fabrication within the next 4 months	660,919	369,892

* Revised

• • • **Fabricated steel awards** this week included the following:

1080 Tons, Lancaster, Pa., research laboratory, Armstrong Cork Co. to Bethlehem Steel Co., Bethlehem.

300 Tons, St. Louis, building for Pittsburgh Plate Glass Co. to Mississippi Valley Structural Steel Co., St. Louis. Woermann Construction Co., St. Louis, general contractors.

230 Tons, Davenport, Iowa, warehouse for the General Grocer Co. through Priester Construction Co. to J. T. Ryerson & Son, Inc., Chicago.

110 Tons, Wisconsin and Iowa, beam spans for the Milwaukee R.R. to American Bridge Co., Pittsburgh.

110 Tons, Princeton, N. J., manufacturing building for Hayden Chemical Co. to Keystone Structural Co., Phoenix, Pa.

100 Tons, Contoocook, N. H., plant for Kingsbury & Dabis Machine Co. to Groisser & Shiager Iron Works, Somerville, Mass., through Temple & Crane Inc., Boston, general contractors.

• • • **Fabricated steel inquiries** this week included the following:

150 Tons, Camden, N. J., manufacturing building, Kind & Knox Gelatine Co.

• • • **Reinforcing bar awards** this week included the following:

900 Tons, Milwaukee, bottling plant for the Miller Brewing Co. to J. T. Ryerson & Son, Inc., Chicago.

365 Tons, Chicago 83rd St. grade separation through M. J. McDermott to J. T. Ryerson & Son, Inc., Chicago.

200 Tons, Medford, Mass., service building for General Electric Co., Lynn, Mass., to Northern Steel Co., Boston.

140 Tons, Lawrence County, Ind., Indiana State road paving contract R2836 through Calumet Paving Co. to Bethlehem Steel Co., Bethlehem.

• • • **Reinforcing bar inquiries** this week included the following:

300 Tons, Chicago, Diesel shop for the Chicago & Northwestern R.R.

• • • **Plate awards** this week included the following:

300 Tons, Venice, Ill., welded 36-in. pipe line for Union Electric Co. of Missouri to Missouri Boiler & Sheet Iron Works, St. Louis.

• • • **Sheet piling inquiries** this week included the following:

4000 Tons, Garrison, N.D., U. S. Engineers, Missouri River Project Garrison Dam. Bids close Sept. 5.

Steel Shortage Hits GM

(CONTINUED FROM PAGE 111)

charges are added—is far out of line.

Some sources here have taken exception to the statistics recently published by the American Iron & Steel Institute showing that the auto industry's "take" now compares favorably with its prewar steel receipts. The auto industry recognizes that the shipments of steel to the auto industry has improved during 1947. It has been pointed out, however, that in making comparisons with prewar years the Institute has used 1941 as a base—a year in which auto production was curtailed by the war program.

According to AISI data, during the past 4 months of 1947, the auto industry received 14.6 pct of total steel production compared with 13.3 pct during the 5 months July to November 1946. This percentage is only slightly less than the prewar percentages of 15.1 for 1940 and 1941.

Similarly, according to these sources, the automotive sheet and strip percentage has improved considerably during the past 4 month as compared with the months of July-November 1946. However, it is contended that when the base 1940-1941 is used, instead of 1941 only, the automotive sheet and strip percentage is still 5.2 pct less than the sheet and strip percentage during the prewar period 1940-41.

According to this source, using the 1940-41 base, the figures are 35.0 pct during the first 4 months of 1947 compared with 40.2 pct in 1940-41. In terms of actual tons of sheet and strip, the average monthly total for Jan.-Apr. 1947 is 455,481 tons or 35.0 pct of the industry total compared with a 1946 monthly average of 320,741 tons or 31.4 pct of the sheet and strip total.

Many other factors contribute to the difficulties experienced by those attempting to relate steel deliveries to the automobile industry to the number of cars and trucks produced.

The effect of retiring handmills from production is appreciated by most steel buyers. Only mild criticism has been heard by this reporter that the industry is today marketing a substantially higher percentage of cold-rolled steel than was the case in the prewar years.

Some sources have also pointed out that a large steel mill expansion program might temporarily at least divert enough steel to a steel building program to make a considerable dent in steel supplies.

Steel suppliers here have also been quick to point out that it is exceedingly difficult—if not impossible—to obtain from steel consumers a *reliable* estimate of future requirements for steel.

One result of the present furore over steel supplies is that it has focused attention on the extent to which the auto industry might help itself by a greater standardization of its steel specifications. The fact that one steel mill was able to triple its normal output for a day by running only the most efficient sheet sizes has brought into sharp relief the cost to the steel consumer of down-time in steel mills while rolls are changed or adjusted.

MACHINE TOOLS

. . . News and Market Activities

Pessimists See Order Volume Reduction as Long Awaited Break

• • • **Whether it's the** heat, or simply a general hiatus in ordering prior to the Machine Tool Show, new firm order volume has fallen off in most sectors the last week or so.

While there is little difference between this year to date and the corresponding months last year for most segments of the machine tool industry, pessimistic sources in the trade believe that a break may be at hand.

Worldwide conditions with machine tool builders are in a terrifically competitive state. European builders are trying to pick off the business formerly held by the Germans; the Swiss industry is looking at this country for business; and a number of U. S. producers have staked a great deal on this coming show.

Business failures, according to official reports, are increasing and some of the larger dealers in the East are buying from private plants for stock at prices more attractive than War Assets Administration's, which at this point represents the ceiling of the market.

In Cincinnati, most producers continue to take an optimistic point of view toward new business stimulated as a result of the Tool Show. Foreign ordering continues spotty, and is complicated by financing. Opportunities for business in rail shops in India are being viewed with hopes, although India is restricted to first trying to get equipment in Great Britain.

Other foreign countries, while still in need of tools they are ready to order from builders here, are trying to iron out loans and credits. Domestic business is off this month, but most large plants are keeping up production by filling in with contract work.

Some foreign groups are seeking rather broad credit terms for periods up to 5 years involving about half the purchase price. While in some instances manufacturers feel they might be willing to finance part of the purchases, the general situation is such as to deter them from too liberal terms. With some improvement in payment possibilities, sellers anticipate further broadening of foreign ordering.

Business Failures Give Large Dealers Opportunity To Buy Now for Stock

° ° °

In Detroit a considerable amount of energy is being devoted to making preparations for the Machine Tool Show. Dealers and producers report that a few new orders are still coming in but the consensus seems to be that it is "too close to show time" to embark on any ambitious machine tool programs.

Stimulation in buying generated by recent price increases has about run its course. Buick is reported to have placed several orders for machine tools for its automatic transmission, which is expected to appear shortly after the turn of the year. It now appears that Pontiac may use the Buick transmission while Cadillac is expected to have its own unit if and when the present Hydra-Matic unit is dropped. Ford is known to have several automatic transmissions under consideration, but there is as yet no indication that a final decision has been made.

Somewhat of a surprise this week was a request for quotations for machines to be used for a new automatic transmission for two unnamed independent car producers. However, there is as yet no evidence that the car builders have contracted to buy these transmission designs.

Tooling orders for machines that are now being offered for automatic transmission programs will not come along, it appears, until a later date.

Machine tool dealers, their salesmen and industrial buyers in the Cleveland district met with WAA in Cleveland Aug. 20, at a meeting which marked the inauguration of a new regional sales promotion unit designed to assist dealers and manufacturers in buying from WAA and also in selling an estimated $72 million worth of government surplus equipment.

Regional director James H. Frier, Jr. led a list of speakers who explained priorities, discounts, changed procedures and WAA's recently accomplished "one-stop" service for buyers—a service implemented by a verified inventory at each sales location, a checking system that tells the customer of the availability of his order, and a quickened method for payment and delivery. Similar meetings were set for 10 a. m. Aug. 22 at Toledo and Aug. 26 at Pittsburgh.

In New York export cooperatives report that shipments of machine tools have gone during the year to every South American country, with the largest volume going to Argentina. Each order requires an import license and the allocation of dollars for the purchase. Import licenses require about 60 days to obtain during which the purchaser has opportunity to obtain the U. S. currency. Machine tool builders have on hand millions of dollars of orders from Europe, but the overall shortage of dollars is preventing acceptance of this business.

Dealers in the East are optimistic about the outlook for business for the remainder of the year. They find that a great many of their customers are going to attend the September show and many of them are going with a view toward prospective purchases.

Elsewhere in the East business is quiet and has been since buyers covered just before individual lines were advanced in price several weeks back. The quietness is emphasized by the shutting off of Latin American business in the interest of conserving American dollars. However, some tool builders feel that export markets in other directions will be developed and general supposition is that domestic business will improve following the Chicago show.

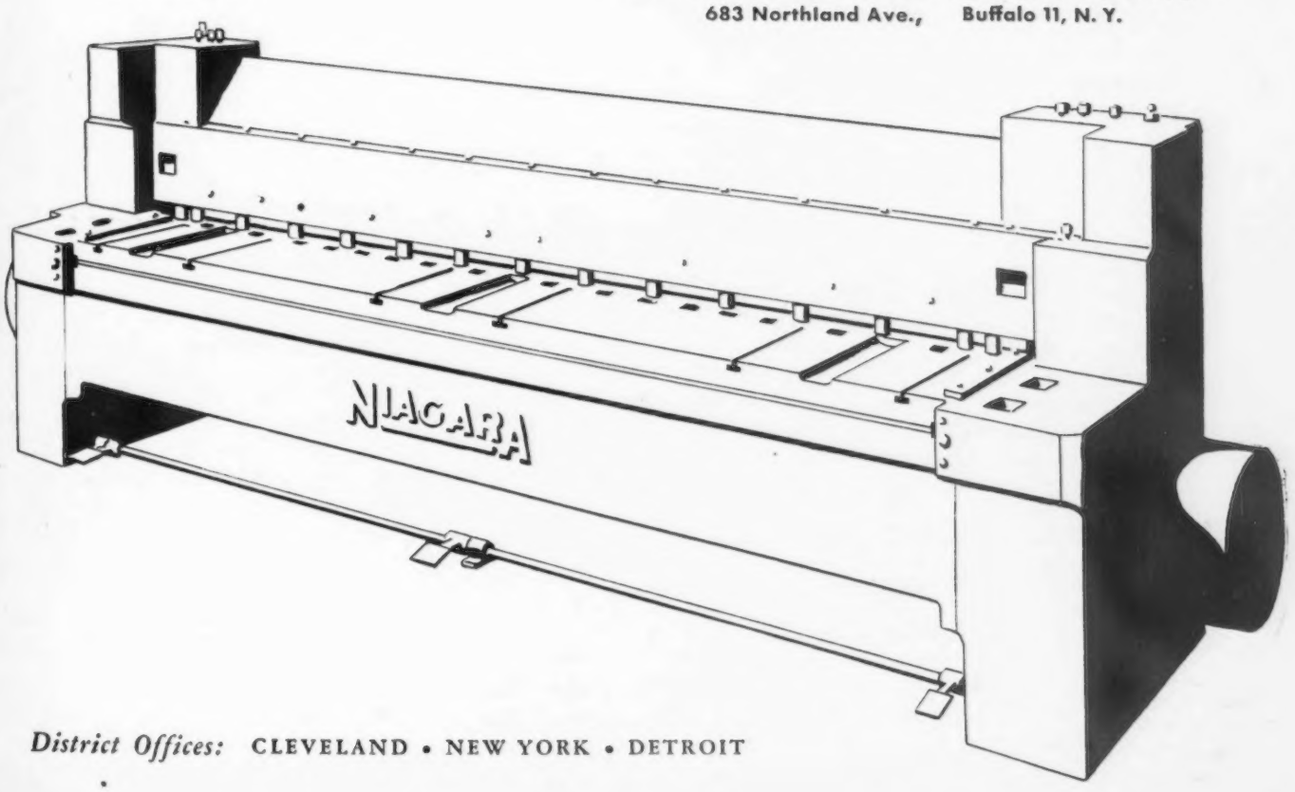
Andrew Carnegie

Great Names in America's Progress

● The name and accomplishments of Andrew Carnegie have earned an honored place in the Hall of Fame of America's steel industry. He was a guiding hand in making more steel and better steel available for making more things and better things for American people.

As builders of presses, shears and other machines for sheet metal working, the men and women of Niagara join with the men and women of America in a tribute to Andrew Carnegie as one of the great names in steel. Men responsible for production are invited to learn about the design and performance of Niagara Machines.

NIAGARA
MACHINE AND TOOL WORKS
683 Northland Ave., Buffalo 11, N. Y.



District Offices: CLEVELAND • NEW YORK • DETROIT

NONFERROUS METALS

. . . News and Market Activities

Copper

• • • **Producers report** the demand for nearby copper continues to require all available supplies with the requirements of the wire mills making up for any slackening in demand from the brass mills. Demand for October copper is very small, consumers apparently anticipating that by that time there may be some reduction in the copper price. Some producers report tonnages available for September delivery. Export copper demand is reported to be not very active. Ingot shipments as reported by the ingot brass and bronze industry for July totaled 16,728 tons, an increase of some 800 tons over the previous month but well below the wartime peaks that ranged from 35,000 to 40,000 tons a month. Copper futures trading has been negligible but the price for nearby metal has been gradually rising as it becomes clear to operators that the market for nearby copper is much firmer than had been anticipated. The Chilean congress is reported to have passed a law empowering the government to seize industries in which illegal strikes have occurred. It is believed that this will serve to stabilize operating conditions in the copper industry there.

•

Storage Plant Burns

Sandusky, Ohio

• • • **A storage room** for scrap magnesium burned down at the plant of Aluminum & Magnesium Inc. on Aug. 22. The room, 60 x 50 ft, separated from the remainder of the plant, burned to the ground without affecting the aluminum or magnesium ingot production plants. Plant officials attribute the blaze to spontaneous combustion.

Monthly Average Prices

• • • **The average prices of the major nonferrous metals in August, based on quotations appearing in** THE IRON AGE, **were as follows:**

	Cents Per Pound
Electrolytic copper, Conn. Valley	21.50
Lake copper, Conn. Valley	21.625
Straits tin, New York	80.00
Zinc, East St. Louis	10.50
Zinc, New York	11.005
Lead, St. Louis	14.80
Lead, New York	15.00

Lead

• • • **Market demand** for lead continues in balance with supply and all consumers are able to obtain their full requirements. It is apparent that consumers are no longer ordering ahead to protect their production schedules. This has had a real effect in stretching the available supply to meet overall demand. Production of primary and secondary lead in July rose slightly less than 800 tons over the previous month to 46,012 tons, according to figures reported by the American Bureau of Metal Statistics. The increase was in primary production which increased over 1000 tons to 42,536 tons in July. Domestic shipments of refined lead totaled 52,549 tons, about 2000 tons less than the previous month. Cable companies were the biggest consumers and received 8900 tons during July, 3700 tons less than the previous month. Battery makers received 6970 tons, 1500 tons less than in June. Lead stocks at refineries at the end of July totaled 31,290 tons, a reduction of about 6500 tons from the previous month. The market for export lead is reported to be at 14.25¢ f.a.s. Gulf Ports.

•

Zinc

• • • **The zinc market** is reported to continue quiet but the demand from galvanizers is reported by some producers to have improved. The large tonnage of Japanese prime western said to be held in New York hangs over the zinc market as a threat to its price stability. Offered to the British Ministry of Supply by the U. S. Commercial Co., they are reported to have shown little interest in view of their overall shortage of dollars. Originally estimated to amount to 12,000 tons, some observers believe that a much higher tonnage is involved. Official confirmation is not obtainable. Industry members point out that the reason this metal is not subject to sale to the government for the permanent stockpile is that there is still considered to be a civilian deficiency in prime western. However, this market position is not in accord with the present situation. Another factor in the transaction is that the Army wishes to obtain cash for the metal which would not be obtained by them directly if purchased for the stockpile. Export zinc demand is not active but the price f. a. s. Gulf Ports remains at 10.00¢ in balance with the domestic market.

•

Resume Futures Trading

New York

• • • **Futures trading** in lead on the Commodity Exchange, Inc., New York, will be resumed soon. The exchange is now studying the feasibility of inaugurating futures trading in secondary aluminum. Trading in silver, dropped after the passage of the Silver Purchase Act of 1934 which prevented the operation of a free silver market in this country, may also be reactivated on the exchange according to responsible sources.

Nonferrous Metals Prices

Cents per pound

	Aug. 20	Aug. 21	Aug. 22	Aug. 23	Aug. 25	Aug.26
Copper, electro, Conn.	21.50	21.50	21.50	21.50	21.50	21.50
Copper, Lake, Conn.	21.625	21.625	21.625	21.625	21.625	21.625
Tin, Straits, New York	80.00	80.00	80.00	80.00	80.00	80.00
Zinc, East St. Louis	10.50	10.50	10.50	10.50	10.50	10.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, f.o.b. shipping point (min. 10,000 lb)	15.00
Aluminum pig, f.o.b. shipping point	14.00
Antimony, American Laredo Tex.	33.00
Beryllium copper, 3.75-4.25% Be; dollars per lb contained Be	$17.00
Beryllium aluminum 5% Be, dollars per lb contained Be	$35.50
Cadmium, del'd	$1.75
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	$21.50
Copper, lake, Conn. Valley	21.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$80 to $90
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%	20.50
Magnesium, sticks, carlots	36.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$85.00 to $87.00
Nickel, electro, f.o.b. New York	37.67
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$56 to $59
Silver, New York, cents per oz.	69.25
Tin, Straits, New York	80.00
Zinc, East St. Louis	10.50
Zinc, New York	11.005
Zirconium copper, 6 pct Zr. per lb contained Zr	$8.75

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

85-5-5-5 ingot	
No. 115	19.00
No. 120	18.50
No. 123	18.00
80-10-10 ingot	
No. 305	23.00
No. 315	21.00
88-10-2 ingot	
No. 210	28.75
No. 215	27.25
No. 245	21.25
Yellow ingot	
No. 405	15.25
Manganese Bronze	
No. 421	17.25

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys:	
0.30 copper, max.	15.75
0.60 copper, max.	15.50
Piston alloys (No. 122 type)	13.75
No. 12 alum. (No. 2 grade)	13.25
108 alloy	13.50
195 alloy	14.25
AXS-679	13.75
Steel deoxidizing aluminum, notch-bar, granulated or shot	
Grade 1—95 pct-97½ pct	14.50
Grade 2—92 pct-95 pct	12.50
Grade 3—90 pct-92 pct	11.75
Grade 4—85 pct-90 pct	11.00

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	37⅝
Electrodeposited	32.34
Rolled, oval, straight, delivered	32.59
Brass, 80-20, frt allowed	
Cast, oval, 15 in. or longer	33¾
Zinc, Cast, 99.99	18¾
Nickel, 99 pct plus, frt allowed	
cast	51
Rolled, depolarized	52
Silver 999 fine	
Rolled, 1000 oz. lots, per troy oz.	67¼

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	43.00
Copper sulphate, 99.5, crystals, bbls	11.50
Nickel salts, single, 425 lb bbls, frt allowed	14.50
Silver cyanide, 100 oz. lots, per oz.	54.00
Sodium cyanide, 96 pct, domestic, 200 lb drums	15.00
Zinc cyanide, 100 lb drums	34.00
Zinc, sulphate, 89 pct, crystals, bbls, frt allowed	7.75

Mill Products

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Drawn tubing: 2 to 3 in. OD by 0.065 in. wall; 3S, 43.5¢; 52S-O, 67¢; 24S-T, 71¢; base, 30,000 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 23.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 30.5¢; base, 30,000 lb.

Flat Sheet: 0.136-in. thickness: 2S, 3S, 23.7¢; 52S, 27.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 32.7¢; base, 30,000 lb.

Extruded Solid Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 3S, 26¢; 14S, 32.5¢; 24S, 35¢; 53S, 61S, 28¢; 63S, 27¢; 75S 45.5¢; base, 30,000 lb.

Wire, Rod and Bar: screw machine stock, rounds, 17S-T, ¼ in., 29.5¢; ½ in., 37.5¢; 1 in., 26¢; 2 in., 24.5¢; hexagons, ¼ in., 35.5¢; ½ in., 30¢; 1 in., 2 in., 27¢; base, 5000 lb. *Rod:* 2S, 3S, 1¼ to 2½ in. diam. rolled, 23¢; cold-finished, 23.5¢ base, 30,000 lb. *Round Wire:* drawn, coiled, B & S gage 17-18; 2S, 3S, 33.5¢; 56S, 39.5¢; 10,000 lb base. B & S gage 00-1: 2S, 3S, 21¢; 56S, 30.5¢. B & S 15-16: 2S, 3S, 32.5¢; 56S, 38¢; base, 30,000 lb.

Magnesium

(Cents per lb f.o.b. mill. Base quantity 30,000 lb.)

Sheet and Plate: Ma. FSa. ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 14, 69¢-74¢; 16, 79¢-81¢; 18, 87¢-89¢; 22, $1.25-$1.31; 24, $1.71-$1.75.

Round Rod: M, diam, in., ¼ to ⅜, 47¢; ½ to ¾, 45¢ 1¼ to 2½, 43.5¢; 3½ to 5, 42.5¢. Other alloys higher.

Square, Hexagonal Bar: M, size across flats, in., ¼ to ⅜, 52.5¢; ½ to ¾, 47.5¢; 1¼ to 2½, 45¢; 3½ to 5, 44¢. Other alloys higher.

Solid Shapes, Rectangles: M, form factors, 1 to 4, 46¢; 11 to 13, 49¢; 20 to 22, 51.5¢; 29 to 31, 59.5¢; 38 to 40, 75.5¢; 47 to 49, 98¢. Other alloys higher.

Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.21; 5/16 to ⅜, $1.12; ⅜ to 7/16, 97¢; 0.058 to 0.064, 7/16 to ½, 89¢; ½ to ⅝, 81¢; 0.065 to 0.082, ⅝ to ¾, 76¢; ¾ to 1, 72¢; 0.083 to 0.108, 1 to 2, 68¢; 0.165 to 0.219, 2 to 3, 59¢; 3 to 4, 57¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	54	43
No. 35 sheets	..	41
Strip, cold-rolled	60	44
Rod		
Hot-rolled	50	39
Cold-drawn	55	44
Angles, hot-rolled	50	39
Plates	52	41
Seamless tubes	83	71
Shot and blocks	..	31

Zinc

(Cents per lb, f.o.b. mill)

Sheet, l.c.l.	15.50
Ribbon, ton lots	14.50
Plates	
Small	13.50
Large, over 12 in.	14.50

Copper, Brass, Bronze

(Cents per pound, f.o.b. mill effective June 11)

	Extruded Shapes	Rods	Sheets
Copper	33.53	....	33.68
Copper, hot-rolled	....	30.03	....
Copper, drawn	....	31.03	....
Low brass	34.04*	31.07	31.38
Yellow brass	32.39*	29.32	29.63
Red brass	34.65*	31.68	31.99
Naval brass	29.56	28.31	34.25
Leaded brass	27.98	24.39	30.13
Commercial bronze	35.52*	32.80	33.11
Manganese bronze	33.14	31.64	37.75
Phosphor bronze, 5 pct.	53.25*	52.25	52.00
Muntz metal	29.17	27.92	32.36
Everdur, Herculoy, Olympic, etc.	37.07	35.57	38.44
Nickel silver, 5 pct.	41.20	40.28	38.67
Architectural bronze	27.94	....	....

*Seamless tubing.

Scrap Metals

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Brass Mill Scrap

(Lots of less than 15,000 lb.)

Cartridge brass turnings	14½
Loose yellow brass trimmings	15½

Copper and Brass

No. 1 heavy copper and wire	15½—16
No. 2 heavy copper and wire	14½—16
Light copper	13½—14
Auto radiators (unsweated)	8½— 9
No. 1 composition	10½—11
No. 1 composition turnings	10 —10½
Clean red car boxes	9 — 9½
Cocks and faucets	8½— 9
Mixed heavy yellow brass	7 — 7¼
Old rolled brass	7 — 7¼
Brass pipe	8 — 8½
New soft brass clippings	11 —11½
Brass rod ends	9½—10
No. 1 brass rod turnings	8½— 9

Aluminum

Alum. pistons free of struts	3½— 4
Aluminum crankcases	5 — 5½
2S aluminum clippings	8 — 8½
Old sheet & utensils	5½— 6
Mixed borings and turnings	— 2
Misc. cast aluminum	5 — 5½
Dural clips (24S)	5 — 5½

Zinc

New zinc clippings	6 — 6½
Old zinc	4¼— 4½
Zinc routings	1½— 2
Old die cast scrap	2½— 3

Nickel and Monel

Pure nickel clippings	15½—17½
Clean nickel turnings	14 —15
Nickel anodes	16 —17
Nickel rod ends	17 —18
New Monel clippings	10 —10½
Clean Monel turnings	7 — 8
Old sheet Monel	9½—10
Old Monel castings	7½— 8
Inconel clippings	8 — 8½
Nickel silver clippings, mixed	7½— 8
Nickel silver turnings, mixed	5½— 6

Lead

Soft scrap lead	10 —10½
Battery plates (dry)	5 — 5½

Magnesium Alloys

Segregated solids	6½— 7
Castings	4½— 5½

Miscellaneous

Block tin	63 —65
No. 1 pewter	48 —50
No. 1 auto babbitt	38 —40
Mixed common babbitt	11½—12
Solder joints	12 —13
Siphon tops	38 —39
Small foundry type	13 —13½
Monotype	12 —12½
Lino and stereotype	11½—12
Electrotype	9½—10
New type shell cuttings	11 —11½
Clean hand picked type shells	4½— 5
Lino and stereo dross	5 — 5½
Electro dross	3 — 3¼

Lead Products

(Cents per lb)

F.o.b. shipping point freight collect Freight equalized with nearest free delivery point.

Full lead sheets	18.25
Cut lead sheets	18.75
Lead pipe, manufacturing point	17.50
Lead traps and bends	List +42%
Combination lead and iron bends and ferrules, also combination lead and iron ferrules	List +42%
Lead wool	19.50

SCRAP

Minor Changes Feature Dull Market

New York

• • • **Minor changes** dotted the price picture in the country's scrap markets this week as the price breaks of the past few weeks went into a testing period. Pittsburgh's No. 1 heavy melting steel quotation was off an average of 25¢, quotable this week at $37.50 to $38 in place of last week's flat $38. Chicago and Philadelphia heavy melting steel and cast grades were unchanged for the week. Cleveland and Birmingham heavy melting prices were off $1 a gross ton.

Scrap sources see the current period as a definite test of prices though the results may not be known for a week or 10 days. It is known that there are still many orders on the books for material at the higher prices prevailing during the recent upsurge. When these have been worked off and mills come in to the market for substantial tonnages prices may turn. Which way they'll go is a question few competent observers feel able to answer at the present time.

In recent weeks steel mills have been getting enough scrap to meet current needs and a few have even been able to stockpile some. It is certain, however, that they are not laying down anything like the amount of scrap they should be setting aside at this time in preparation for the winter. In short, volume is good for the present but it is not good on the long term viewpoint, all sources agree.

•

PITTSBURGH—Within the past week, additional sales of No. 1 heavy melting steel were made at $38 a ton. A week ago brokers were forced to pay $38 a ton for odd lots, but are now able to pick up some tonnage at $37.50 a ton. Heavy melting steel is quotable this week at $37.50 to $38 a ton, down an average of 25¢ a ton from last week's single quotation of $38 a ton. Some sources here believe that the market is now going through its second major test since early in the year, when the trend was towards unprecedented high levels. There is still a long range shortage for the heavy melting grades. Furthermore, no sharp drop from this week's levels can be expected until higher priced orders, placed several weeks ago, are cleaned up. It is becoming increasingly clear that conversion deals in the steel industry, whereby some quarters have sold ingots at a base price plus the current price of scrap, have been in a great measure responsible for the unusual upward swing in scrap prices since the first of the year.

• •

CHICAGO—With the dealers and brokers busy completing the old higher priced orders the market remained quiet last week. Most observers believed prices would not go much lower if any. One mill came out with a $37 and $38 offer on No. 2 and No. 1 respectively, from industries only. At press time very few, if any, took advantage of this offer and it appears this was more of a feeler than anything else. Should interest in this offer for earmarked scrap not quicken immediately, authorities here believe prices will have been tested and the next free market purchase will have to be higher than the last sales.

•

CLEVELAND — Heavy melting grades dropped $1 during the week based on two purchases by a local consumer. Machine shop turnings dropped 50¢ and railroad heavy melting was down $2 with a narrower spread. Heavy melting grades in the Valley are down 50¢. Mills and brokers report that scrap shipments are coming in on old orders in heavy volume and that mill inventories are being built up to the 30-day level.

•

BOSTON—Brokers quote heavy melting steel at $31 a ton f.o.b. On the other hand Worcester has been offering $31.50 after paying $32.25 early in the week, at which time Pittsburgh bought at $32.50. Brokers are reported to have old orders at considerably better than $31, but, as usual on a falling market, yards are reluctant to give up their limited supply. Turnings prices are uncertain due to lack of transactions. Cast prices are unsettled.

•

PHILADELPHIA—Scrap prices were unchanged last week from the previous levels. Mills are in the market but are buying only minimum operating requirements. Reports from dealers and brokers indicate that there is little scrap in the yards, although shipments on old orders are said to be flowing freely.

•

NEW YORK—No change was reported in brokers' buying prices during the past week. Brokers feel the market is testing itself at these levels. Hot weather has slowed up dealer operations somewhat but there is still a fair amount of older high priced business to be cleaned up and this material is moving out in good volume. A typographical error was made in last week's quotations for No. 2 heavy melting and No. 2 bundles. They were quotable last week at $32, the same as No. 1 heavy melting steel scrap.

•

DETROIT — There is scattered evidence that the scrap market is somewhat weaker in Detroit this week but the present weakness has not yet been reflected in new scrap contracts. Large mill buyers are still paying $37 for Detroit scrap and $38 for outstate material and the flow of scrap is reported to be at somewhat improved rates. Dealers are showing some hesitation about shipping outstate at todays prices and this may be a factor in the reduction this week of $1 in the price of low phos plate. Few buyers are appearing in the cast grade market but the previous price of $33-39 appears to be holding.

•

BUFFALO — Steelmaking scrap was off 50¢ a ton this week in sympathy with other centers as brokers continued to make the market while dealers and consumers jockeyed for position. The lines were sharply drawn in the tug of war between the latter two groups with dealers digging in at the $40 mark and the big mills offering $38 for new contracts. A sale of selected number one heavy melting to a local consumer at $41.50 confirmed a price of $39 to $39.50 for number one and number two mixed steel scrap. The chief consumers, however, were believed to be trying to stall off buying until after Labor Day. Low phos scrap was quoted at $41 to $42 while cast grades were strong at unchanged prices.

•

ST. LOUIS—The high prices at which scrap iron is now selling has had the effect of maintaining the volume of receipts in the St. Louis market despite the 100° temperatures prevailing in the area. Dealers have orders out that will carry them until Sept. 1, but are awaiting the further trend of the market before accepting orders from the mills.

•

BIRMINGHAM—Following a price drop of $3 per ton here last week, heavy melting steel declined $1 this week. No change occurred for cast grades, which continue in short supply. Most scrap coming into this district is being purchased currently by local consumers.

•

TORONTO—While there has been some improvement in offerings of iron scrap materials in Canadian markets, receipts as a whole continue less than 25 pct of consumer requirements. Local dealers state that with the higher prices prevailing on cast scrap, collectors are showing more interest in seeking out this material, although the hot weather of the past few weeks has tended to discourage widescale collections.

Waste Dealers Will Meet

New York

• • • **Arrangements have been completed for the Fall convention of the National Assn. of Waste Material Dealers at the Ritz-Carlton Hotel, Atlantic City. Sidney Danziger, convention committee chairman, said the meeting would be held Oct. 4-6, with most of the sessions scheduled for Oct. 6.**

IRON AND STEEL SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$37.50 to $38.00
RR. hvy. melting	41.00 to 42.00
No. 2 hvy. melting	37.50 to 38.00
RR. scrap rails	45.50 to 46.00
Rails 2 ft. and under	49.00 to 49.50
No. 1 comp'd bundles	37.50 to 38.00
Hand bdld. new shts.	37.50 to 38.00
Hvy. axle turn.	36.00 to 37.00
Hvy. steel forge turn.	36.00 to 37.00
Mach. shop turn.	32.50 to 33.00
Shoveling turn.	34.50 to 35.00
Mixed bor. and turn.	32.50 to 33.00
Cast iron borings	33.50 to 34.00
No. 1 cupola cast	42.00 to 43.00
Hvy. breakable cast	37.00 to 37.50
Malleable	52.00 to 53.00
RR. knuck and coup.	47.50 to 48.00
RR. coil springs	47.50 to 48.00
RR. leaf springs	47.50 to 48.00
Rolled steel wheels	47.50 to 48.00
Low phos.	45.00 to 45.50

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.50 to $39.00
No. 2 hvy. melting	38.50 to 39.00
No. 1 bundles	38.50 to 39.00
No. 2 dealers' bundles	38.50 to 39.00
Bundled mach. shop turn.	38.50 to 39.00
Galv. bundles	36.50 to 37.00
Mach. shop turn.	33.50 to 34.00
Short shov. turn.	35.50 to 36.00
Cast iron borings	34.50 to 35.00
Mix. borings & turn.	33.50 to 34.00
Low phos, hvy. forge.	43.50 to 44.00
Low phos, plates	41.00 to 41.50
No. 1 RR. hvy. melt.	41.00 to 42.00
Rerolling rails	47.00 to 48.00
Miscellaneous rails	43.00 to 44.00
Angles & splice bars	45.50 to 46.50
Locomotive tires, cut	42.00 to 43.00
Cut bolster & side frames	44.00 to 45.00
Standard stl. car axles	48.00 to 49.00
No. 3 steel wheels	45.00 to 46.00
Couplers & knuckles	45.00 to 45.50
Malleable	60.00 to 61.00
No. 1 mach. cast.	47.00 to 48.00
Rails 2 ft. and under	48.00 to 48.50
No. 1 agricul. cast.	43.00 to 44.00
Hvy. breakable cast.	39.00 to 41.00
RR. grate bars	40.50 to 41.50
Cast iron brake shoes	43.00 to 44.00
Cast iron carwheels	42.00 to 42.50

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	33.00 to 34.00
Mach. shop turn.	28.50 to 29.00
Shoveling turn.	30.50 to 31.00
Cast iron borings	28.50 to 29.00
Mixed bor. & turn.	28.00 to 29.00
Low phos. plate	39.00 to 40.00
No. 1 cupola cast	44.00 to 45.00
Hvy. breakable cast.	35.00 to 36.00
Scrap rails	39.00 to 40.00

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars:

No. 1 hvy. melting	$31.00	
No. 2 hvy. melting	31.00	
Nos. 1 and 2 bundles	31.00	
Busheling	31.00	
Shoveling turn.	27.00	
Machine shop turn.	25.50 to	26.00
Mixed bor. & turn.	25.50 to	26.00
Cl'n cast. chem. bor.	26.50 to	27.00
No. 1 machinery cast.	39.00 to	41.00
No. 2 machinery cast.	37.00 to	39.00
Heavy breakable cast.	35.50 to	37.00

DETROIT

Per gross ton, brokers' buying prices, f.o.b. cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles	34.00 to 35.00
New busheling	34.00 to 35.00
Flashings	34.00 to 35.00
Mach. shop turn.	27.00 to 28.00
Shoveling turn.	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Mixed bor. & turn.	29.00 to 30.00
Low phos. plate	37.00 to 38.00
No. 1 cupola cast.	38.00 to 39.00
Hvy. breakable cast.	31.00 to 32.00
Stove plate	32.00 to 34.00
Automotive cast.	38.00 to 40.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	36.50 to 37.50
No. 1 bundles	36.50 to 37.50
No. 2 bundles	36.50 to 37.50
Mach. shop turn.	28.50 to 29.50
Shoveling turn.	28.50 to 29.50
Mixed bor. & turn.	28.50 to 29.50
Clean cast chemical bor.	32.00 to 33.00
No. 1 cupola cast.	46.50 to 47.50
Hvy. breakable cast.	43.50 to 44.50
Cast. charging box.	43.50 to 44.50
Clean auto cast.	46.50 to 47.50
Hvy. axle forge turn.	36.50 to 37.50
Low phos. plate	40.00 to 41.00
Low phos. punchings	40.00 to 41.00
Low phos. bundles	39.00 to 40.00
RR. steel wheels	44.00 to 45.00
RR. coil springs	44.00 to 45.00
RR. malleable	58.00 to 60.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to $40.50
No. 2 hvy. melting	38.50 to 39.50
Bundled sheets	38.00 to 39.00
Mach. shop turn.	31.25 to 32.25
Locomotive tires, uncut	41.00 to 42.00
Mis. std. sec. rails	42.00 to 43.00
Rerolling rails	45.00 to 46.00
Steel angle bars	40.00 to 41.00
Rails 3 ft. and under	45.00 to 46.00
RR. steel springs	45.00 to 46.00
Steel car axles	43.00 to 44.00
Grate bars	36.00 to 37.00
Brake shoes	38.00 to 39.00
Malleable	58.00 to 60.00
Cast iron car wheels	42.00 to 43.00
No. 1 machinery cast	43.00 to 44.00
Hvy. breakable cast.	38.00 to 39.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	34.00 to 35.00
No. 2 bundles	34.00 to 35.00
No. 1 busheling	34.00 to 35.00
Long turnings	23.00 to 24.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	38.00 to 38.50
Structural and plate	38.00 to 38.50
No. 1 cupola cast.	44.00 to 45.00
Stove plate	42.00 to 42.50
No. 1 RR. hvy. melt.	36.00 to 37.00
Steel axles	38.00 to 39.00
Scrap rails	37.50 to 38.00
Rerolling rails	38.50 to 39.00
Angles & splice bars	38.50 to 39.00
Rails 3 ft. & under	38.50 to 39.00
Cast iron carwheels	35.00 to 36.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to $40.00
No. 2 hvy. melting	39.50 to 40.00
Mach. shop turn.	33.00 to 34.00
Short shov. turn.	34.00 to 35.00
Cast iron borings	33.00 to 34.00
Low phos.	44.00 to 45.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$32.00	
No. 2 hvy. melting	32.00	
No. 2 bundles	32.00	
Comp. galv. bundles	30.00	
Mach. shop turn.	25.00 to	26.00
Mixed bor. & turn.	25.00 to	26.00
Shoveling turn.	27.00 to	28.00
No. 1 cupola cast.	39.00 to	40.00
Hvy. breakable Cast.	39.00 to	40.00
Charging box cast.	39.00 to	40.00
Stove plate	39.00 to	40.00
Clean auto cast.	39.00 to	40.00
Unstrip. motor blks.	36.50 to	37.50
Cl'n chem. cast bor.	27.00 to	28.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.00 to $39.50
No. 2 hvy. melting	39.00 to 39.50
No. 1 bundles	39.00 to 39.50
No. 2 bundles	39.00 to 39.50
No. 1 busheling	39.00 to 39.50
Mach. shop turn.	30.00 to 31.00
Shoveling turn.	32.00 to 33.00
Cast iron borings	30.00 to 31.00
Mixed bor. & turn.	30.00 to 31.00
No. 1 cupola cast.	40.00 to 42.00
Charging box cast.	36.00 to 38.00
Stove plate	39.00 to 40.00
Clean auto cast.	40.00 to 42.00
Small indl. malleable	39.00 to 41.00
RR. malleable	46.00 to 52.00
Low phos. plate	41.00 to 42.00
Scrap rails	40.00 to 41.00
Rails 3 ft. & under	44.00 to 45.00
RR. steel wheels	42.00 to 43.00
Cast iron carwheels	42.00 to 43.00
RR. coil & leaf spgs.	42.00 to 43.00
RR. knuckles & coup.	42.00 to 43.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.00 to $38.50
No. 2 hvy. melting	38.00 to 38.50
No. 1 bundles	38.00 to 38.50
No. 2 bundles	38.00 to 38.50
No. 1 busheling	38.00 to 38.50
Drop forge flashings	38.00 to 38.50
Mach. shop turn.	31.50 to 32.00
Shoveling turn.	33.00 to 34.00
Steel axle turn.	38.00 to 38.50
Cast iron borings	33.00 to 34.00
Mixed bor. & turn.	33.00 to 34.00
Low phos.	41.00 to 42.00
No. 1 machinery cast.	47.00 to 47.50
Malleable	54.00 to 55.00
RR. Cast.	47.00 to 47.50
Railroad grate bars	42.00 to 44.00
Stove plate	42.00 to 44.00
RR. hvy. melting	40.50 to 41.00
Rails 3 ft. & under	47.00 to 48.00
Rails 18 in. & under	48.00 to 49.00

SAN FRANCISCO

Per gross ton f.o.b. shipping point

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	22.00
No. 2 bales	22.00

Per gross ton delivered to consumer

No. 3 bales	$16.50
Mach. shop turn.	13.00
Elec. furn. 1 ft. und.	26.00
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50
No. 2 hvy. melting	22.50
No. 1 bales	22.50
No. 2 bales	22.50
No. 3 bales	16.00
Mach. shop turn.	14.50
No. 1 cupola cast.	$32.00 to 33.00
RR. hvy. melting	23.00

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. hvy. melt.	$20.00 to $22.00
Elec. furn. 1 ft. und.	$25.50 to 27.00
No. 1 cupola cast.	29.00
RR. hvy. melting	23.00

HAMILTON, ONT.

Per gross ton delivered to consumer: Cast grades f.o.b. shipping point

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast.	32.00 to 33.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

* Ceiling price.

Comparison of Prices . .

Advances over past week in **Heavy Type**, declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel: (cents per pound)	Aug. 26, 1947	Aug. 19, 1947	July 29, 1947	Aug. 27, 1946
Hot-rolled sheets	2.80	2.80	2.80	2.425
Cold-rolled sheets	3.55	3.55	3.55	3.275
Galvanized sheets (10 ga.)	3.95	3.95	3.95	4.05*
Hot-rolled strip	2.80	2.80	2.80	2.45
Cold-rolled strip	3.55	3.55	3.55	3.05
Plates	2.95	2.95	2.95	2.50
Plates wrought iron	6.85	6.85	5.95	4.112
Stain's c-r strip (No. 302) *24 ga	30.30	30.30	30.30	30.30
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.75	$5.75	$5.75	$5.00
Tinplate, electro (0.50 lb)	5.05	5.05	5.05	4.50
Special coated mfg. ternes	4.90	4.90	4.90	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.90	2.90	2.90	2.50
Cold-finished bars	3.55	3.55	3.55	3.10
Alloy bars	3.30	3.30	3.30	2.92
Structural shapes	2.80	2.80	2.80	2.35
Stainless bars (No. 302)	26.00	26.00	26.00	25.97
Wrought iron bars	7.15	7.15	6.15	4.76
Wire and Wire Products: (cents per pound)				
Bright wire	3.55	3.55	3.55	3.05
Wire nails	4.25	4.25	4.25	3.75
Rails: (dollars per 100 lb)				
Heavy rails	$2.50	$2.50	$2.50	$43.39*
Light rails *per net ton	2.85	2.85	2.85	49.18*
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$45.00	$45.00	$45.00	$39.00
Sheet bars	66.00	66.00	59.00	38.00
Slabs, rerolling	45.00	45.00	45.00	39.00
Forging Billets	55.00	55.00	55.00	47.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	58.43
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.80	2.80	2.80	2.30
Skelp	2.60	2.60	2.35	2.05

Pig Iron: (per gross ton)	Aug. 26, 1947	Aug. 19, 1947	July 29, 1947	Aug. 27, 1946
No. 2, foundry, Phila.	$41.22	$41.22	$40.39	$30.43
No. 2, Valley furnace	36.50	36.50	36.50	28.50
No. 2, Southern Cin'ti	39.75	39.75	38.25	27.80
No. 2, Birmingham	34.88	34.88	33.38	24.88
No. 2, foundry, Chicago†	36.00	36.00	36.00	28.50
Basic del'd Philadelphia	40.72	40.72	39.89	29.93
Basic, Valley furnace	36.00	36.00	36.00	28.00
Malleable, Chicago†	36.50	36.50	36.50	28.50
Malleable, Valley	36.50	36.50	36.50	28.50
Charcoal, Chicago	49.49	49.49	48.49	42.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡ For carlots at seaboard.

Scrap: (per gross ton)	Aug. 26, 1947	Aug. 19, 1947	July 29, 1947	Aug. 27, 1946
Heavy melt'g steel, P'gh.	*$37.75*	$38.00	$41.75	$20.00
Heavy melt'g steel, Phila.	37.00	37.00	40.50	18.75
Heavy melt'g steel, Ch'go	38.75	38.75	40.25	18.75
No. 1, hy. comp. sheet, Det.	34.50	34.50	37.50	17.32
Low phos. Youngs'n	44.50	44.50	46.50	22.50
No. 1, cast, Pittsburgh	42.50	42.50	39.75	20.00
No. 1, cast, Philadelphia	47.00	47.00	48.50	20.00
No. 1, cast, Chicago	47.50	47.50	47.50	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$12.00	$12.00	$12.00	$7.50
Foundry coke, prompt	13.75	13.75	13.75	8.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	21.50	21.50	21.50	14.375
Copper, Lake, Conn.	21.625	21.625	21.625	14.375
Tin, Straits, New York	80.00	80.00	80.00	52.00
Zinc, East St. Louis	10.50	10.50	10.50	8.25
Lead, St. Louis	14.80	14.80	14.80	8.10
Aluminum, virgin	15.00	15.00	15.00	15.00
Nickel, electrolytic	37.67	37.67	37.67	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	14.50

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL	PIG IRON	SCRAP STEEL
Aug. 26, 1947	3.19141¢ per lb.	*$37.10* per gross ton	*$37.83* per gross ton
One week ago	3.19141¢ per lb.	$37.35 per gross ton	$37.92 per gross ton
One month ago	2.88239¢ per lb.	$36.38 per gross ton	$40.83 per gross ton
One year ago	2.70711¢ per lb.	$28.13 per gross ton	$19.17 per gross ton

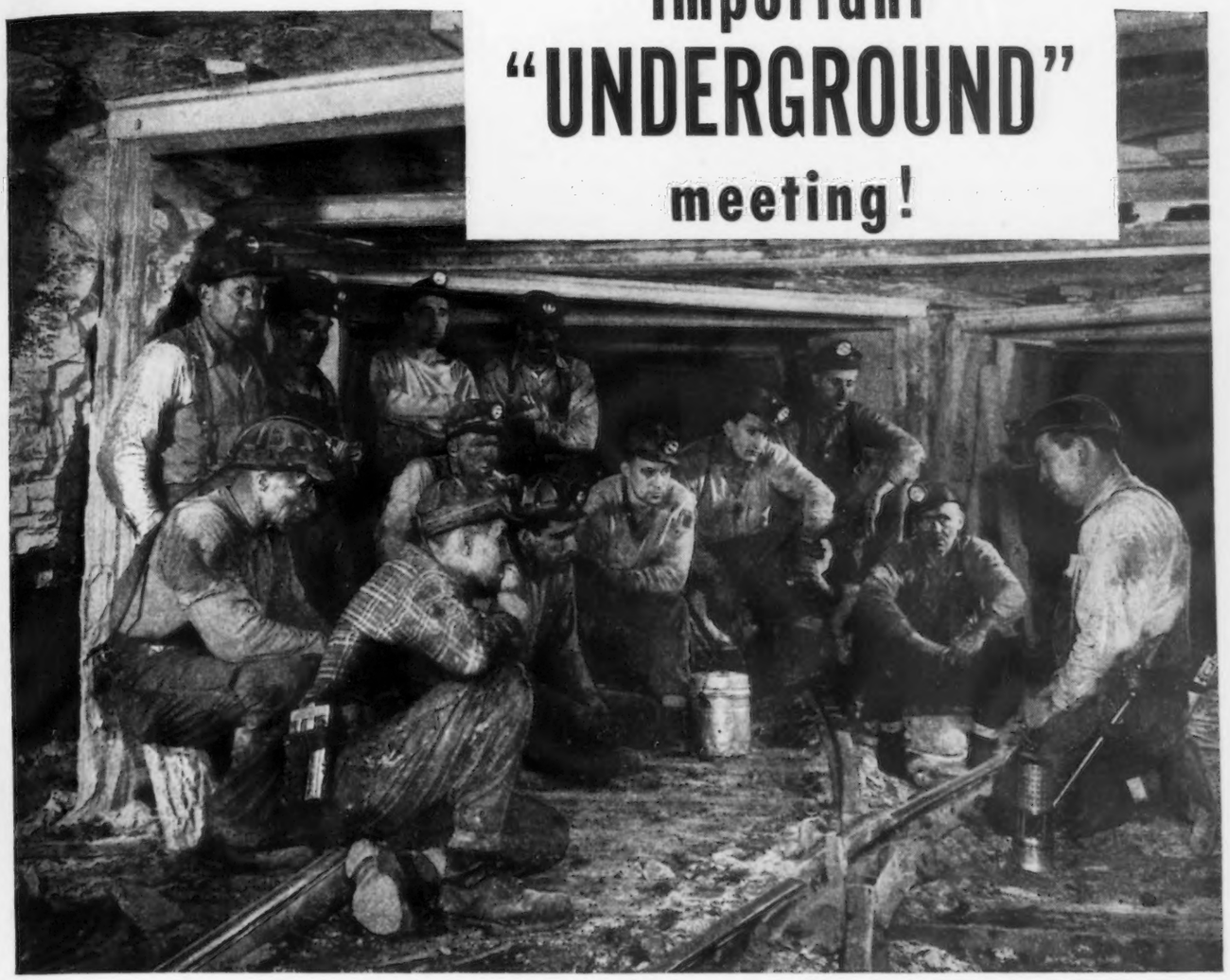
	HIGH	LOW	HIGH	LOW	HIGH	LOW
1947	3.19141¢ Aug. 5	2.87118¢ Jan. 7	$37.35 Aug. 19	$30.14 Jan. 7	$41.67 Aug. 5	$29.50 May 20
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Important "UNDERGROUND" meeting!



What the men in this photo are "plotting" is—*their own safety.* For this is a "safety meeting" conducted by a coal mine section foreman with his men to check on up-to-the-minute safety conditions.

Meetings like this are held regularly by all section foremen in America's progressive bituminous coal mines. They are just one phase of the never-relaxing safety program which has made coal mining now twice as safe as it was 40 years ago on the basis of man-hours worked—and more than four times safer if measured in tons mined.

America's bituminous coal mines are not only being operated with greater safety than ever before . . . but through skillful management and huge investments in mechanized equipment they are the most productive—and pay the highest wages—in the world.

LIVING CONDITIONS of coal miners are keeping pace with improvements in their working conditions.

Today, about two-thirds—over 260,000—of the nation's bituminous coal miners own their own homes or rent from private landlords; the remaining one-third live in company-owned houses...at rentals below those ordinarily available to workers in other industries. For example, *newly built modern homes* in the Appalachian region rent for as little as $18 per month.

Home-ownership among miners is increasing—due in no small measure to encouragement and financial aid from mine owners who realize that a man becomes a better worker and a better citizen as he develops pride in "a home of his own."

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE
Washington, D. C.
Affiliate of NATIONAL COAL ASSOCIATION

BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 25c above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 20,000 lb to 89,999 lb. (9) Carload lot in manufacturing trade. (10) Delivered Los Angeles only. (11) Boxed. (12) Produced to dimensional tolerances in AISI Manual Sec. 6. (13) Delivered San Francisco only: Includes 3 pct freight tax. (14) Delivered Kaiser Co. prices: includes 3 pct freight tax. (15) to 0.035 to 0.075 in. thick by ⅝ to 3½ in. wide. (16) Spot market as high as $92 gross ton. (17) Delivered Los Angeles: add ½c per 100 lb for San Francisco. (18) Slab prices subject to negotiation in most cases. Some producers charge (19) $5 more, (20) $3 more, (21) $1 more. Some producers charge (22) 0.05¢ less, (23) 0.10¢ less, (24) 0.20¢ less.

Basing Points	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		San Franc'co, Los Angeles, Seattle	DELIVERED TO Detroit	New York	Philadelphia
INGOTS															
Carbon, rerolling	($36.00 f. o. b. mill) (Spot market as high as $80 gross ton)														
Carbon, forging	$46.00														
Alloy	$56.00						(Canton = $56.00)								
BILLETS, BLOOMS, SLABS															
Carbon, rerolling [18]	$45.00[19]	$45.00[19]	$45.00[19]	$50.00	$45.00[19]	$45.00[19]	$50.00						$48.00[19]		
Carbon, forging billets	$55.00[20]	$55.00[20]	$55.00[20]	$58.00	$55.00[20]	$55.00[20]	$58.00		(Duluth = $57.00)				$58.00[20]		
Alloy	$66.00	$66.00				$66.00	(Bethlehem, Massillon, Canton = $66.00)						$69.00		
SHEET BARS[16]							$66.00								
PIPE SKELP	2.60¢[21]	2.65¢					2.60¢[21]	2.60¢[21]							
WIRE RODS	2.80¢[21]	2.80¢[21]		2.80¢[21]	2.85¢		(Worcester = 2.90¢[21])					3.52¢[13]			
SHEETS															
Hot-rolled	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	2.80¢	3.175¢	(Ashland, Ky. = 2.80¢)		3.54[17]¢	2.95¢	3.09¢	3.00¢
Cold-rolled[1]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢	3.55¢		3.65¢	3.55¢			3.70¢	3.96¢	3.93¢
Galvanized (10 gage)	3.95¢[23]	3.95¢[23]	3.95¢[23]		3.95¢[23]		3.95¢	3.95¢	4.05¢	3.95¢		4.62¢[17]		4.14¢	4.05¢
Enameling (12 gage)	3.95¢[22]	3.95¢[22]	3.95¢[22]	3.95¢			3.95¢		4.05¢	3.95¢			4.10¢[22]	4.35¢	4.33¢
Long ternes [2] (10 gage)	4.05¢[24]	4.05¢	4.05¢[24]											4.45¢	4.41¢
STRIP															
Hot-rolled [3]	2.80¢	2.80¢	2.80¢	2.80¢[15]	2.80¢		2.80¢					3.60¢[17]	2.95¢	3.23¢	3.18¢
Cold-rolled [4]	3.55¢	3.65¢		3.55¢			3.55¢			(Worcester = 3.75¢)			3.70¢	3.96¢	3.93¢
Cooperage stock	3.10¢	3.10¢			3.10¢		3.10¢							3.39¢	
TINPLATE															
Standard cokes, base box	$5.75	$5.75	$5.75		$5.85			$5.85	$5.85		(Warren, Ohio = $5.75)		$6.175	$6.062[11]	
Electro, box 0.25 lb.	Deduct 90¢ from standard coke base box price.														
Electro, box 0.50 lb.	Deduct 70¢ from standard coke base box price.														
Electro, box 0.75 lb.	Deduct 50¢ from standard coke base box price.														
BLACKPLATE, 29 gage[5]	3.90¢	3.90¢	3.90¢		4.00¢			4.00¢	4.00¢					4.29¢	4.20¢
BLACKPLATE, CANMAKING															
55 lb. to 70 lb.	Deduct $1.55 from standard coke base box.														
75 lb. to 95 lb.	Deduct $1.65 from standard coke base box.														
100 lb. to 118 lb.	Deduct $1.55 from standard coke base box.														
TERNES, MFG., Special coated	Deduct 85¢ from standard coke base box price.														
BARS															
Carbon steel	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢	2.90¢					3.625¢[17]	3.05¢	3.31¢	3.28¢
Rail steel[6]	Subject to negotiation because of fluctuating scrap prices.														
Reinforcing (billet)[7]	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢	2.75¢				3.325¢[17]		3.04¢	2.95¢
Reinforcing (rail)	Subject to negotiation because of fluctuating scrap prices.														
Cold-finished[8]	3.55¢	3.55¢	3.55¢	3.55¢		3.55¢							3.70¢	3.96¢	3.93¢
Alloy, hot-rolled	3.30¢	3.30¢				3.30¢	3.30¢	(Bethlehem, Massillon, Canton = 3.30¢)					3.45¢		3.44¢
Alloy, cold-drawn	4.10¢	4.10¢	4.10¢	4.10¢		4.10¢							4.25¢		
PLATE								(Coatesville = 3.15¢, Claymont = 3.15¢, Geneva, Utah = 3.125¢)							
Carbon steel[12]	2.95¢	2.95¢	2.95¢	2.95¢	2.95¢		2.95¢	2.95¢				3.76¢[14]		3.17¢	3.15¢
Floor plates	4.20¢	4.20¢												4.60¢	4.58¢
Alloy	3.80¢	3.80¢			(Coatesville = 4.50¢)									4.02¢	3.895¢
SHAPES, Structural	2.80¢	2.80¢	2.80¢		2.80¢	2.80¢	(Geneva, Utah = 2.975¢, Bethlehem = 2.80¢)					3.43¢[10]		3.00¢	2.94¢
SPRING STEEL, C-R															
0.26 to 0.40 carbon	3.20¢			3.20¢			(Worcester = 3.40¢)								
0.41 to 0.60 carbon	4.70¢			4.70¢			(Worcester = 4.90¢)								
0.61 to 0.80 carbon	5.30¢			5.30¢			(Worcester = 5.50¢)								
0.81 to 1.00 carbon	6.80¢			6.80¢			(Worcester = 7.00¢)								
Over 1.00 carbon	9.10¢			9.10¢			(Worcester = 9.30¢)								
MANUFACTURERS' WIRE[9]															
Bright	3.55¢	3.55¢		3.55¢	3.55¢		(Worcester = 3.65¢, Duluth = 3.60¢)					4.56¢[13]		3.96¢	3.93¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire Base														
Spring (high carbon)	4.60¢	4.60¢		4.60¢	(Worcester = 4.70¢, Duluth = 4.85¢) (Trenton = 4.85¢)							5.28¢[13]		4.66¢	4.595¢
PILING, Steel sheet	3.30¢	3.30¢				3.30¢								3.71¢	3.68¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

Basing Point	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt	Subject to negotiation			Subject to negotiation		
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	Subject to negotiation			Subject to negotiation		
Billets, P'gh, Chi, Canton, Watervliet, Syracuse, Balt	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville	23.00	22.50	17.50	17.50	21.00	25.50
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.50	26.00	20.50	21.00	24.50	30.00
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.50	26.00	20.50	21.00	24.50	30.00
Plates, P'gh, Middletown, Canton	31.50	29.50	23.50	24.00	28.00	33.00
Shapes, structural, P'gh, Chi	27.50	26.00	20.50	21.00	24.50	30.00
Sheets, P'gh, Chi, Middletown, Canton, Balt	39.00	37.00	29.00	31.50	35.50	39.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.50	23.50	18.50	19.00	26.00	38.00
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.50	30.50	24.00	24.50	35.00	56.50
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila, Ft. Wayne	27.50	26.00	20.50	21.00	24.50	30.00
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton (4 to 6 in.)	72.09	72.09	.....	68.49	.....	.....

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, Ohio)*

W	Cr	V	Mo	Co	Base Per lb
18	4	1	—	—	82¢
18	4	1	—	5	$1.29
18	4	2	—	—	93¢
1.5	4	1.5	8	—	59¢
6	4	2	6	—	63¢

High-carbon-chromium* ..... 47¢
Oil hardening manganese* ..... 26¢
Special carbon* ..... 24¢
Extra carbon* ..... 20¢
Regular carbon* ..... 17¢

Warehouse prices on and east of Mississippi are 2¢ per lb. higher; west of Mississippi, 4¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	Per lb
Field grade	4.50¢
Armature	4.80¢
Electrical	5.30¢
Motor	6.05¢
Dynamo	6.75¢
Transformer 72	7.25¢
Transformer 65	7.95¢
Transformer 58	8.65¢
Transformer 52	9.45¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb
No. 1 O.H., per 100 lb $2.75
Angle splice bars, 100 lb 3.25
(F.o.b. basing points) *per 100 lb*
Light rails (from billets) $3.10
Light rails (from rail steel), f.o.b. Williamsport, Pa. 3.45

	Base per lb
Cut spikes	4.85¢
Screw spikes	6.90¢
Tie plate, steel	3.05¢
Tie plates, Fittsburg, Calif.	3.20¢
Track bolts	7.00¢
Track bolts, heat treated, to rail roads	7.25¢

Basing points, light rails, Pittsburgh, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio; Weirton, W. Va.; St. Louis, Kansas City, Minnequa, Colo.; Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa.; Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa.; Richmond.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$7.05	$14.10

CLAD STEEL

Base prices, cents per pound

Stainless-clad	Plate	Sheet
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Coatesville, Pa.	*24.00	*22.00
Nickel-clad 10 pct, f.o.b. Coatesville, Pa.	21.50	....
Inconel-clad 10 pct, f.o.b. Coatesville	30.00	....
Monel-clad 10 pct, f.o.b. Coatesville	29.00	....
Aluminized steel Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Base per keg	Delivered San Francisco
Standard & coated nails	$4.25†	$5.33
Galvanized nails‡‡	4.00†	5.08
Cut nails, carloads, Pittsburgh base	5.80*	....

† 10¢ additional at Cleveland, 35¢ at Worcester. ‡‡ Plus $2.75 per 100 lb galvanizing extra. *Less 20¢ to jobbers.

	Base per 100 lb	
Annealed fence wire	$4.20‡	$5.21
Annealed galv. fence wire	4.65‡	5.66

‡10¢ additional at Worcester.

To the dealer f.o.b. Pittsburgh, Chicago, Birmingham

	Base	column
Woven wire fence*	91	114
Fence posts, carloads	90††	...
Single loop bale ties	91	115
Galvanized barbed wire**	101	121
Twisted barbless wire	101	...

* 15½ gage and heavier. ** On 80-rod spools in carload quantities. ††Pittsburgh, Duluth.

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55
Sheets									
Hot-rolled	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
Cold-rolled	5.30	5.30	5.30	....	5.30	5.30	5.30	5.30	5.30
Galvanized	....	5.85	....	....	....	6.00	....	....	....
Strip									
Hot-rolled	4.30	4.30	4.30	....	4.30	4.30	4.30	4.30	4.30
Cold-rolled	....	....	5.30	....	....	5.30	5.30	5.30	5.30†
Shapes	....	4.30	....	....	4.30	4.30	4.30	4.30	....
Beams	....	4.30	....	....	....	4.30	....	....	....
Bars									
Hot-rolled	4.45	4.45	4.45	....	....	4.45	4.45	4.45	4.45
Cold-rolled	....	....	....	....	....	....	....	....	....
Bar shapes	....	4.45	....	....	4.45	4.45	4.45	4.45	....

† Pittsburgh, add 0.10¢ at Chicago and Gary.

PIPE AND TUBING

Base discounts. f.o.b. Pittsburgh and Lorain, steel buttweld and seamless. Others f.o.b. Pittsburgh only

Base price, $200.00 per net ton

Standard, threaded & coupled

Steel, buttweld	Black	Galv.
½-in.	50½	34½
¾-in.	53½	38½
1-in.	56	41½
1¼-in.	56½	42
1½-in.	57	42½
2 in.	57½	43
2½ and 3-in.	58	43½
Wrought Iron, buttweld		
½-in.	+ 7	+29
¾-in.	2½	+19
1 and 1¼-in.	8	+11
1½-in.	13½	+ 7½
2-in.	14	+ 7
Steel, lapweld		
2-in.	49	34
2½ and 3-in.	52	37
3½ to 6-in.	54	39
Steel, seamless		
2-in.	48	33
2½ and 3-in.	51	36
3½ to 6-in.	53	38
Wrought Iron, lapweld		
2-in.	5½	+14½
2½ to 3½-in.	8	+10½
4-in.	12	+ 5
4½ to 8-in.	10	+ 6½

Extra Strong, plain ends

Steel, buttweld		
½-in.	49½	35
¾-in.	53½	39
1-in.	55½	42
1¼-in.	56	42½
1½-in.	56½	43
2-in.	57	43½
2½ and 3-in.	57½	44
Wrought Iron, buttweld		
½-in.	+ 2½	+23
¾-in.	3½	+17
1 to 2-in.	13	+ 7
Steel, lapweld		
2-in.	48	34
2½ and 3-in.	52	38
3½ to 6-in.	55½	41½
Steel, seamless		
2-in.	47	33
2½ and 3-in.	51	37
3½ to 6-in.	52½	40½
Wrought Iron, lapweld		
2-in.	8½	+11
2½ to 4-in.	17½	+ ½
4½ to 6-in.	13	+ 5

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, cut length 4 to 24 ft, inclusive.

OD in.	Gage BWG	Seamless Hot-Rolled	Seamless Cold-Drawn	Electric Weld Hot-Rolled	Electric Weld Cold-Drawn
2	13	$16.67	$19.99	$16.17	$19.39
2½	12	22.42	26.87	21.75	26.06
3	12	24.93	29.90	24.18	29.00
3½	11	31.17	37.39	30.23	36.27
4	10	38.69	46.38	37.53	44.99

CAST IRON WATER PIPE

Per net ton

6-in. to 24-in. del'd Chicago $85.06
6-in. to 24-in. del'd New York 83.30
6-in. to 24-in., Birmingham 74.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles for all rail shipment; rail and water shipment less 98.50
Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

Percent Off List

½ in. & smaller x 6 in. & shorter.. 48
9/16 & ⅝ in. x 6 in. & shorter.... 50
All larger diam and longer lengths.. 47
Lag, all diam over 6 in. long..... 48
Lag, all diam x 6 in. & shorter.... 50
Plow bolts 57

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller 48
9/16 to 1 in. inclusive 47
1⅛ to 1½ in. inclusive 45
1⅝ in. and larger 40

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	USS	SAE
Base discount less case lots		
7/16 in. and smaller		51
½ in. and smaller	50	..
½ in. through 1 in.		48
9/16 in. through 1 in.	49	..
1⅛ in. through 1½ in.	47	46
1⅝ in. and larger	40	..

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

Consumer

Packages, nuts separate .... 65 and 10
In bulk 75

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets *(½ in. and larger)*

Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham $5.25
F.o.b. Lebanon, Pa. 5.40

Small Rivets (7/16 *in. and smaller*)

Percent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ..... 55 and 5

Cap and Set Screws

(In packages) — *Percent Off List Consumer*

Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright..... 56
¾ to 1 in. x 6 in., SAE 1035, heat treated 47
Set screws, cup and oval points..... 61
Milled studs 33
Flat head cap screws, listed sizes.... 21
Fillister head cap, listed sizes 40

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Metallurgical grade, f.o.b. producing plant.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports*)

Per Gross Ton

Old range, bessemer $5.95
Old range, nonbessemer 5.80
Mesabi, bessemer 5.70
Mesabi, nonbessemer 5.55
High phosphorus 5.55
Prices quoted retroactive to Jan. 1, 1947.

METAL POWDERS

Prices in cents per pound in ton lots, f.o.b. shipping point.

Brass, minus 100 mesh.....24¢ to 28½¢
Copper, electrolytic, 100 and 325 mesh .....30¢ to 31½¢
Copper, reduced, 150 and 200 mesh .....29¢ to 30½¢
Iron, commercial, 100, 200, 325, mesh 96 + % Fe carlots....10¢ to 17¢
Swedish sponge iron, 100 mesh, c.i.f. N. Y., carlots, ocean bags..7.4¢ to 8.5¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots ..... 5¢
Iron, hydrogen reduced, 300 mesh and finer, 98 + % Fe, drum lots .....63¢ to 80¢
Iron, electrolytic, unannealed, 325 mesh and coarser, 99 + % Fe .....35¢ to 37¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe.... 29¢ to 32¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe.....90¢ to $1.75
Aluminum, 100, 200 mesh, carlots .....23¢ to 26¢
Antimony, 100 mesh ..... 36.05¢
Cadmium, 100 mesh $2.00
Chromium, 100 mesh and finer.... $1.025
Lead, 100, 200, & 300 mesh 18.50¢ to 23.50¢
Manganese, minus 325 mesh and coarser ..... 49¢
Nickel, 100 mesh ..... 51½¢
Silicon, 100 mesh ..... 26¢
Solder powder, 100 mesh..8½¢ plus metal
Stainless steel, 302, minus 100 mesh...75¢
Tin, 100 mesh ..... 90¢
Tungsten metal powder, 98%-99%, any quantity, per lb..... $3.05
Molybdenum powder, 99%, in 100-lb kegs, f.o.b. York, Pa., per lb. $2.65
Under 100 lb $2.90

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa. .....$11.50 to $12.50
Foundry, beehive (f.o.b. oven)
Connellsville, Pa. ..... 13.00 to 14.50
Foundry, Byproduct
Chicago, del'd $17.10
Chicago, f.o.b. 16.10
New England, del'd 19.50
Seaboard, Kearney, N. J., f.o.b. 17.85
Philadelphia, f.o.b. 16.75
Swedeland, Pa., f.o.b. 16.75
Buffalo, del'd 18.25
Ashland, Ohio, f.o.b. 15.50
Painesville, Ohio, f.o.b. 16.60
Erie, del'd 16.75
Cleveland, del'd 17.90
Cincinnati, del'd 15.39
St. Louis, del'd 18.03
Birmingham, del'd 15.00

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Carloads, Per 1000

No. 1, Ohio $64.00
First quality, Pa., Md., Ky., Mo., Ohio 70.00
First quality, New Jersey 75.00
Sec. quality, Pa., Md., Ky., Mo, Ohio 64.00
Sec. quality, New Jersey 59.00
No. 2, Ohio 56.00
Ground fire clay, net ton, bulk.... 10.00

Silica Brick

Pennsylvania and Birmingham ...$70.00
Chicago District and Alabama 79.00
Silica cement, net ton (Eastern)... 12.00
East Chicago 13.00

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Plymouth Meeting, Chester $59.00

Magnesite Brick

Standard, Balt. and Chester $81.00
Chemically bonded, Baltimore 70.00

Grain Magnesite

Domestic, f.o.b. Balt. and Chester in bulk $44.50
Domestic, f.o.b. Chewelah, Wash., in bulk 24.00
in sacks 28.00
Clinker (dead burned) dolomite, bulk, per net ton, f.o.b. Billmeyer, Pa., Millersville, Ohio 10.50
Midwest, add 10¢; Mo. Valley, add 20¢

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$4.44	$5.18	$5.69	$4.73	$5.28	$4.79	$4.52	$4.78	$5.48	$8.32	$8.42	$9.83	$9.93
New York	4.67	5.67[1]	6.07	4.97	5.80	5.02	4.72	4.97	5.52	8.37	8.47	9.87	9.97
Boston	4.70	5.57[12]	5.50[12]	4.70	6.71	5.05	4.77	4.92	5.57	8.57	8.67	9.92	10.02
Baltimore	4.29	....	5.54	4.70	....	4.74	4.64	4.75	5.45	....	....	....	....
Norfolk	4.75	....	....	5.15	....	5.00	5.00	5.05	5.85	....	....	....	....
Chicago	3.65	....	....	4.05	5.05	4.25	4.10	4.10	4.75	8.05	8.15	9.30	9.40
Milwaukee	4.099	4.899[1]	5.249	4.199	....	4.399	4.249	4.249	5.10	8.399	8.399	9.649	9.649
Cleveland	3.95	4.55	5.238	4.188	5.00	4.25†	4.311	4.10	4.75	8.308	8.408	9.30	9.40
Buffalo	4.25	5.10	5.90	4.60	5.61[5]	4.85	4.40	4.40	4.95	8.05	8.15	9.30	9.40
Detroit	4.35	5.20	5.97	4.64	5.59	4.84†	4.72	4.50	5.22	8.46	8.56	9.69	9.79
Cincinnati	4.471	5.166	5.166	4.694	....	4.903	4.744	4.703	5.403	....	....	....	....
St. Louis	4.549	5.399[1]	5.974	4.649	5.774	4.899	4.699	4.699	5.424	8.524	8.624	9.774	9.874
Pittsburgh	4.25	5.10[1]	5.65	4.35	4.95	4.60	4.40	4.40	5.10	8.05	8.15	9.30	9.40
St. Paul	4.584[7]	5.434[1]	5.834[2]	4.684[7]	....	4.884[7]	4.734[7]	4.734[7]	4.826[6]	....	....	....	....
Omaha	4.868	6.118[1]	6.468	5.168	....	5.418	5.218	5.218	5.918	....	....	....	....
Indianapolis	4.51	5.29	5.84	4.61	5.46	4.86	4.66	4.65	5.36	....	....	....	....
Birmingham	4.45[11]	....	5.65	4.45[11]	....	4.65[11]	4.40[11]	4.40[11]	5.93	....	....	....	....
Memphis	4.82[11]	5.88[11]	6.37	5.02[11]	....	5.17[11]	4.97[11]	4.97[11]	5.88	....	....	....	....
New Orleans	*4.98[11]	6.29[1]	....	5.18[11]	....	5.33[11]	*5.03[11]	*5.13[11]	6.29[6]	....	....	....	....
Houston	5.30	....	6.60	5.25	....	5.35	5.15	5.30	6.60	8.75[16]	8.55[16]	9.70[16]	9.80[16]
Los Angeles	5.65	7.35[1]	7.10	5.95	8.70[5]	5.40	5.50	5.40	7.25[14]	9.90[15]	9.60[15]	11.35[15]	11.35[15]
San Francisco	5.20[8]	....	6.85	5.50[8]	....	....	....	....	7.35[10]	....	....	....	....
Seattle	5.30[4]	7.10[2]	6.70[2]	5.60[4]	....	5.45[4]	5.25[4]	5.45[4]	7.45[14]	....	9.75[6]	....	11.1[6]
Portland	5.30	....	6.90	....	....	....	....	....	....	....	....	....	....
Salt Lake City	6.25	....	7.50	6.75	....	6.10	6.25	6.35	7.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 450 to 1499 lb; (10) 500 to 999 lb; (11) 400 to 399 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over.

* Add 46¢ for sizes not rolled in Birmingham.

† Up to ¾ in. thick and 90 in. wide.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	37.00	37.50	38.00	38.50	.....	Boston	Everett	$0.50 Arb.	.....	45.50	46.00	.....	.....
Birdsboro	40.00	40.50	41.00	41.50	45.00	Boston	Steelton	4.82	.....	.....	.....	.....	46.82
Birmingham	32.88–35.88	33.38–36.38	.....	.....	.....	Brooklyn	Bethlehem	3.00	40.00	40.50	41.00	41.50	.....
						Brooklyn	Birdsboro	3.50	.....	.....	.....	.....	48.50
Buffalo	35.50–39.50	36.00–40.00	36.50–40.50	.....	.....	Cincinnati	Birmingham	4.87	37.75–40.75	38.25–41.25	.....	.....	.....
Chicago	35.50	36.00	36.50	37.00	.....	Jersey City	Bethlehem	1.84	38.84	39.34	39.84	40.34	.....
Cleveland	35.50–39.25	36.00–39.75	36.50–40.25	.....	.....	Jersey City	Birdsboro	2.33	.....	.....	.....	.....	47.33
						Los Angeles	Provo	5.94	42.94	43.44	.....	.....	.....
Duluth	36.00	36.50	37.00	37.50	.....	Mansfield	Cleveland-Toledo	2.33–41.58	37.83–42.08	38.33–42.58	38.83–	39.33	.....
Erie	35.50	36.00	36.50	37.00	.....	Philadelphia	Bethlehem	1.67	38.67	39.17	39.67	40.17	.....
Everett	.....	45.00	45.50	.....	.....	Philadelphia	Swedeland	1.01	42.01	42.51	43.01	43.51	.....
Granite City	36.50	37.00	37.00	.....	.....	Philadelphia	Birdsboro	1.49	41.49	41.99	42.49	42.99	46.49
Neville Island	36.00	36.50	36.50	37.00	.....	Philadelphia	Steelton	2.15	39.15	.....	.....	.....	44.15
Provo	37.00	37.50	.....	.....	.....	San Francisco	Provo	5.94	42.94	43.44	.....	.....	.....
Sharpsville	36.00	36.50	36.50	37.00	.....	Seattle	Provo	5.94	42.94	43.44	.....	.....	.....
Steelton	37.00	.....	.....	.....	42.00	St. Louis	Granite City	0.75 Arb.	37.25	37.75	37.75	.....	.....
Struthers, Ohio	36.50	.....	.....	.....	.....								
Swedeland	41.00	41.50	42.00	42.50	.....								
Toledo	35.50	36.00	36.50	37.00	.....								
Troy, N. Y.	37.00	37.50	38.00	38.50	42.00								
Youngstown	36.00	36.50	36.50	37.00	.....								

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$45.50; f.o.b. Buffalo — $46.75. Add $1.25 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorous $44.00 per gross ton, f.o.b. Lyles, Tenn. Delivered to Chicago, $49.49. High phosphorous charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	157.00
Delivered Pittsburgh	140.25

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Briquets—Cents per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk	7.00	7.25	7.80
Ton lots	8.00	8.60	10.50
Less ton lots	8.40	9.00	10.90

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$46.00	$47.00
F.o.b Pittsburgh	50.00	51.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.

96% min. mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30
L.c.l. lots	32

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	32
Ton lots	34
Less ton lots	36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.06% max. C, 0.06% P, 90% Mn	21.00	22.10	22.70
0.10% max. C	20.50	21.60	22.20
0.15% max. C	20.00	21.10	21.70
0.30% max. C	19.50	20.60	21.20
0.50% max. C	19.00	20.10	20.70
0.75% max. C, 7.00% max. Si	16.00	17.10	17.70

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.65
Ton lots	7.70
Briquet, contract basis, carlots, bulk freight allowed, per lb of briquet	6.75
Ton lots	7.75
Less ton lots	8.15

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, $69.00 f.o.b. Keokuk, Iowa; $70.00 f.o.b. Niagara Falls. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add 50¢ per ton for each 0.50 pct Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.

	Eastern	Central	Western
96% Si, 2% Fe	16.50	17.85	19.60
97% Si, 1% Fe	16.00	18.25	20.00

Ferrosilicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si. 1 lb Si briquets.

	Eastern	Central	Western
Carload, bulk	4.25	4.50	4.70
Ton lots	5.25	5.85	6.15
Less ton lots	5.65	6.25	6.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
25% Si	15.00	15.65	15.90
50% Si	7.80	8.30	8.50
75% Si	10.00	10.30	11.05
80-90% Si	11.30	11.60	12.35
90-95% Si	12.80	13.10	13.80

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	23.00	23.40	24.00
0.10% C	22.50	22.90	23.50
0.15% C	22.00	22.40	23.00
0.20% C	21.75	22.15	22.25
0.50% C	21.50	21.90	22.00
1.00% C	21.00	21.40	21.50
2.00% C	20.50	20.90	21.00
65-69% Cr, 4-9% C	15.60	16.00	16.15
62-66% Cr. 4-6% C. 6-9% Si.	16.60	17.00	17.15

Briquets — Contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk	9.85	10.10	10.20
Ton lots	10.75	11.65	12.25
Less ton lots	11.15	12.05	12.65

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chrominum contained, lump sie, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	16.70	17.10	17.25
Ton lots	17.90	19.20	20.00
Less ton lots	18.60	19.90	20.70

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

	Eastern	Central	Western
Carload	21.00	21.40	21.50
Ton lots	22.35	23.00	24.20
Less ton lots	23.35	24.00	25.20

Chromium Metal

Contract prices, cents per lb, chromium contained, carload, f.o.b. shipping point, freight allowed, 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C.	83.50	85.00	86.25
0.50% max. C.	79.50	81.00	82.25
9.00% min. C.	79.50	81.00	82.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.

30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	14.00	14.50	16.55
Ton lots	16.10	16.85	19.00
Less ton lots	17.10	17.85	20.00

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	15.50	16.00	18.05
Ton lots	17.60	18.45	20.20
Less ton lots	18.60	19.45	21.20

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone; 3.5¢ for western zone.

	Cast Turnings	Distilled
Ton lots	$1.60	$2.35 $2.95
Less ton lots	1.95	2.70 3.75

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr. 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

	Eastern	Central	Western
Ton lots	16.00	17.10	19.05
Less ton lots	16.75	17.85	19.80

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn. 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

	Eastern	Central	Western
Ton lots	14.25	15.35	17.30
Less ton lots	15.00	16.10	18.05

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, f.o.b. plant Niagara Falls, Washington, Pa. York, Pa., per pound contained W, 5 ton lots, freight allowed	$2.50
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.	
Openhearth	$2.70
Crucible	$2.80
High speed steel (Primos)	$2.90
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, per pound contained V_2O_5	$1.10
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb	
Ton lots	$2.50
Less ton lots	$2.55
Ferromolybdenum, 55-75%, f.o.b Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 40-45%, f.o.b Langeloth, Washington, Pa., Per pound contained Mo.	80¢
Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y. ton lots, per pound contained Ti	$1.23
Less ton lots	$1.35
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.35
Less ton lots	$1.40
High carbon ferotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$142.50
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. (Siglo) Tenn., $3 unitage per gross ton	$65.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	17.00¢
Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy	
Carload, bulk	5.50¢
Alsifer, 20% Al, 40% Si, 40% Ft, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	6.50¢
Ton lots	7.00¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Car lots	9.00¢
Ton lots	9.75¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.

Ferroboron, 17-50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
Less ton lots	$1.30	$1.3075	$1.329

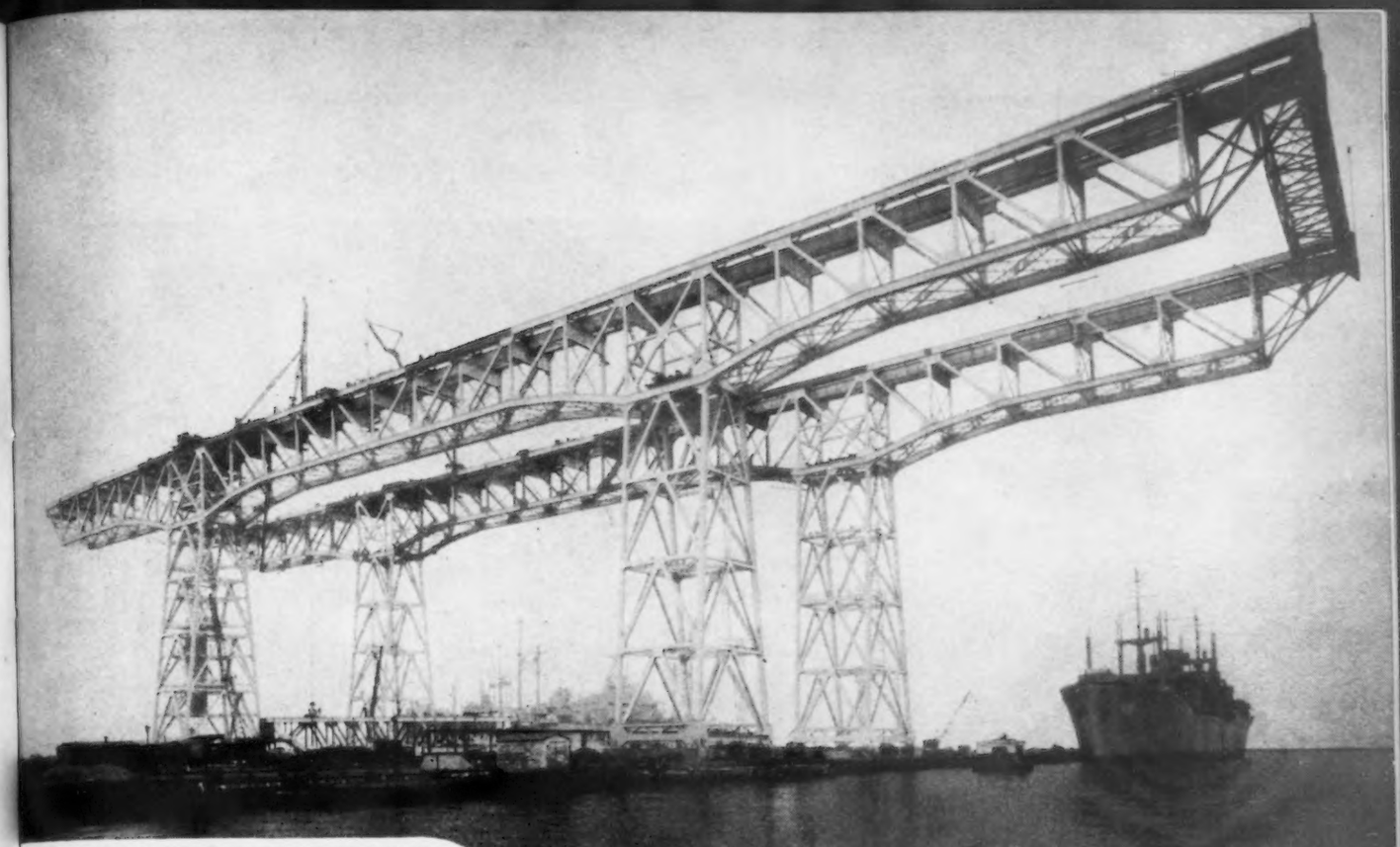
Manganese — Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max C.

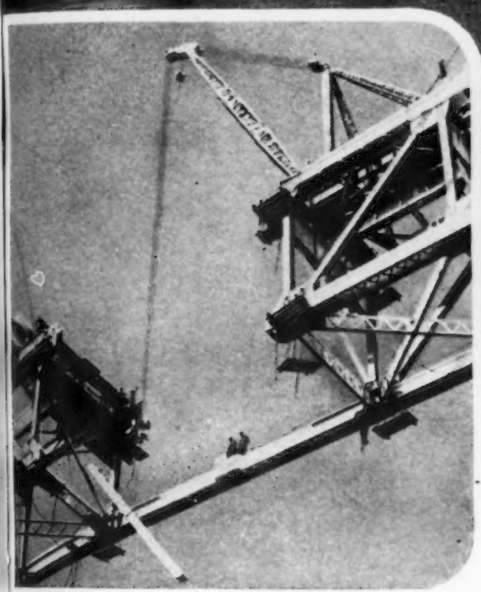
Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.044

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

Less ton lots	$2.10	$2.1125	$2.1445

Silcaz, contract basis, f.o.b. plant freight allowed, per pound.	
Carload lots	35¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b., Suspension Bridge, N. Y., freight allowed, Ti 15—17%, B 0.90—1.15%, Si 2.5—3.0% Al 1.0—2.0%.	
Ton lots, per pound	8.0¢





The World's Largest Crane Runway

THIS CRANE runway for the San Francisco Naval Shipyard at Hunters Point, Calif., is capable of lifting gun turrets and other huge sections weighing as much as a million pounds. American Bridge Company fabricated and erected the structural steel for this massive 8,400-ton structure, including traveling cranes, crane runway bridges, and towers. 730 feet long and extending 162½ feet over the water on each end, the 209-foot high assembly will carry two traveling cranes, each having a 142-foot span, and operating either singly or in tandem.

Inset—American Bridge Erection Crew closing the last runway bridge trusses.

. . . *fabricated and erected by* AMERICAN BRIDGE

RECORD breaking structures like this new Navy crane runway are rare. But the statement "*Fabricated and erected by American Bridge*" applies equally to thousands of jobs of all types and sizes.

Our unexcelled facilities and equipment, our technically trained personnel, and our wealth of experience . . . all these are at your service, regardless of the size of your project. Just contact our nearest Contracting Office.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

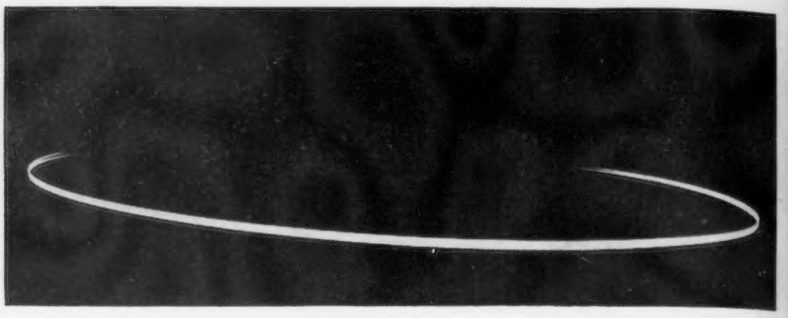
Contracting Offices in: Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

UNITED STATES STEEL

Fatigue Cracks

BY C. T. POST



What Is It?

• • The usual day's ration of publicity photographs down in the news room is 5 lb of cheese cake seasoned with girlies on assorted automobile hoods, 2 lb of tycoons, and 15 oz of ground-breakings for new industrial plants. All fit comfortably in the especially designed super-sized circular file alongside the news editor's desk. Occasionally, though, there's a shot so spectacular, so trembling with import for the brave new world, that the brains department gravely passes it from hand to hand before rushing to the photo-engraver's.

The official U. S. Navy photograph above, we're sure, has all the impact of the Third Fleet steaming into battle. We didn't notice until after we'd sneaked it out that the caption was missing. We had a bad half hour figuring out what we were looking at, and we're just mean enough to let you guess.

For the first correct answer we're offering a genuine flyin' saucer, ready to take-off. Come now, THINK.

Oh Henry!

• • During Henry Kaiser's most recent triumphal visit to the nation's capital, the West Coast industrial mogul tossed reporters a capsule education on how to keep up-to-date on the steel industry. Gene Hardy, our Washington newshound, was thwarted by native modesty from saying anything in print, but he whispered in our ear what may be the key as to Henry J.'s rapid acquisition of steel industry know-how. Seems the gentlemen of the daily press were quizzing Mr. K on the gyrations of steel and scrap prices. After explaining the situation in some detail, he summed up with, "Why don't you read THE IRON AGE?"

Not A Knot

• • We rather fancied Nate Collier's cartoon (August 21, p. 115) depicting Republic Steel's announcement that its pig iron prices would be based upon the price of scrap as published in THE IRON AGE. The girls agree that the little iron pig is "darling." But, having taken our Boy Scout training rather seriously, the knots by

"Whither thou goest . . ."

which the pig is tied to scrap worry us. Our Scout Manual indicates without bias that an unspliced rope has only two ends. The Collier cartoon clearly shows two ends at each knot, or a total of four. Oh, well—the scrap situation *is* pretty complicated.

"Whither thou goest . . ."

• • The cartoon caption "Whither thou goest . . . " not only seemed to sum up the situation pretty well, but being a quotation from the *Book of Ruth, I, 16,* touched the religious side of our nature as well. There's another Biblical quotation, though, that we feel Republic Steel could have used to emphasize that erratic scrap prices would not exceed the pig iron price: *"Unstable as water, thou shalt not excel" (Genesis, XLIX,4).*

Dear Editor:

MARTEMPER-MARQUENCH?

Sir:

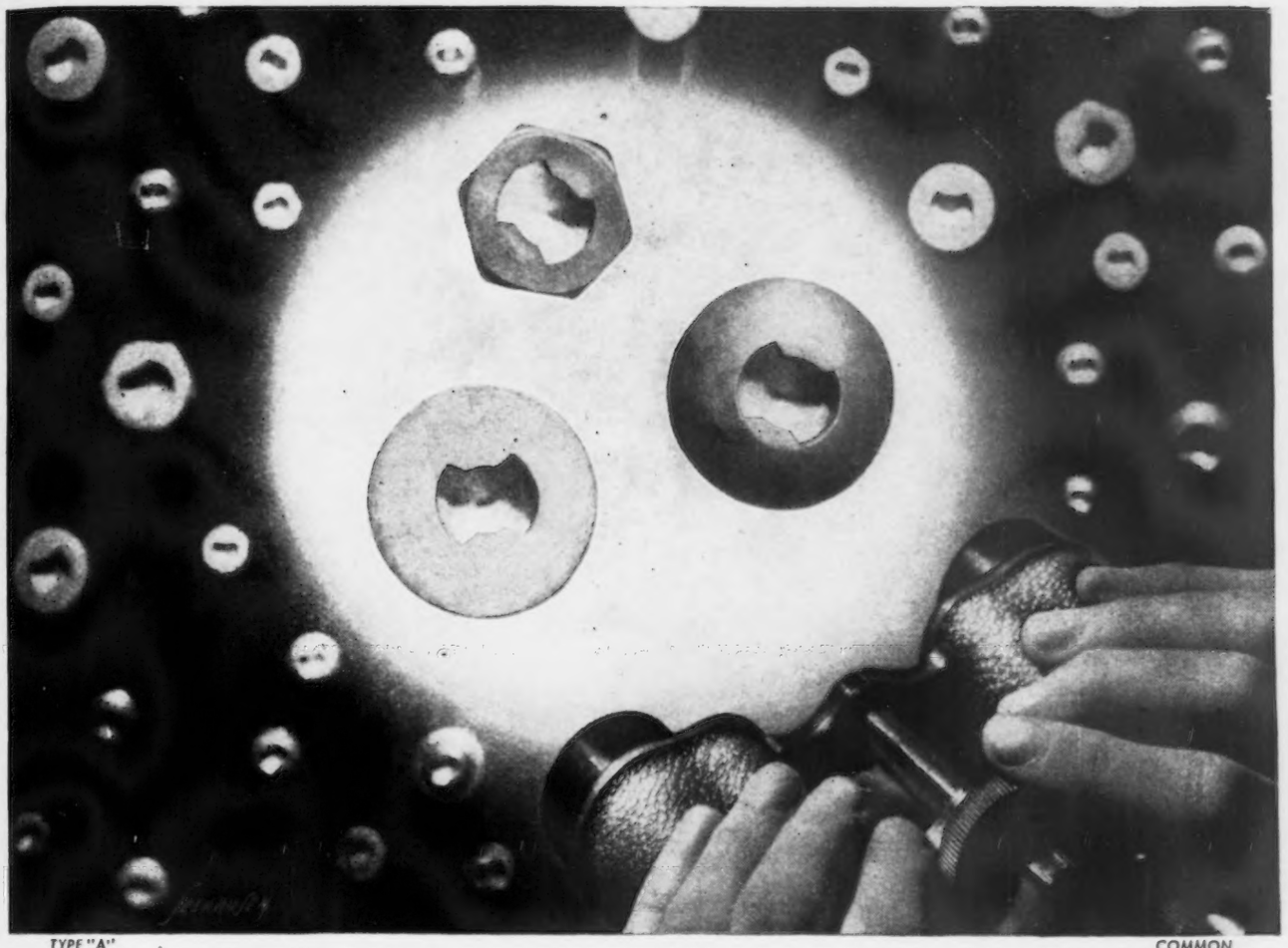
I wish to correct one important point in Mr. Boyer's otherwise excellent article, "Controlling Physical Properties by the Interrupted Quench," in the July 3 issue. The definition which he gives for marquenching is the original definition for martempering and the practice universally followed; i.e., the piece is quenched to a temperature approximating the Ms point and only held long enough for the temperature to equalize when it is allowed to finish cooling in air, thereby permitting martensite to form uniformally throughout the section.

My original article "Martempering" in THE IRON AGE, Jan. 28 and Feb. 4, 1943 issue gave data on the influence of section v. the time in the quenching bath required to equalize temperature. I have not heard of the term marquenching. Holding times required to complete transformation at or slightly below the M_s temperature would be so long as to be definitely uncommercial. The transformation observed by Mr. Boyer may be due to incorrect determination of the M_s temperature of 475°F. Whenever an austenized part is held in the quenching bath long enough to obtain transition structures, the operation term should change from martempering to austempering. Marquenching appears, therefore, to be Mr. Boyer's personal term for the martempering practice as it is universally practiced here and abroad.

B. F. SHEPHERD
Chief Metallurgist
Ingersoll-Rand Co.
Phillipsburg, N. J.

● **Editor's Note:** *Mr. Boyer, author of the article under discussion, has the following comments to offer in reply to Mr. Shepherd's notes:*

It is true that martempering has become an accepted term for the process whereby steel parts are quenched rapidly from the austenitizing temperature to a medium maintained at a temperature just above the M_s point. Parts are then held for a length of time just sufficient to permit temperature equalization throughout the sections and subsequently cooling in air to room temperature. The suggestion of a distinction in the definition of the terms martempering and marquenching was not originated by the writer. I first heard the terms criticized verbally by a well-known Swedish metallurgist and since that time by several metallurgists, who are native to this country. The



TYPE "A" ASSEMBLY BIT

COMMON SCREWDRIVER

What do you look for in a Screw?

IS IT HIGHER PRODUCTION? . . . The records of users credit CLUTCH HEAD with contributing 15% to 50% increases in comparison with all other screws.

IS IT SAFETY? . . . Users say dead-center entry with the Center Pivot column plus the deep definite torque grip eliminate driver canting and skidding; disposing of damage to manpower and materials.

IS IT SPEED? . . . High visibility of the roomy Clutch recess inspires confidence to cut out slow-down hesitation for a faster, smoother driving tempo.

IS IT EASIER DRIVING? . . . Operators testify that the all-square engagement of CLUTCH HEAD's Type "A" Bit with the straight-walled recess eliminates need for fatiguing end pressure to combat "ride-out" as set up by tapered driving contact.

IS IT DURABLE BIT SERVICE? . . . Would you like to see the Type "A" Bit that drove 214,000 screws in continuous assembly operation for the largest automobile manufacturer in the world?

IS IT ONE-HANDED DRIVING? . . . The simple CLUTCH HEAD Lock-On unites screw and bit as a unit for reaching into hard-to-get-at spots . . . also for easy service withdrawal of screws located behind surrounding units.

Send for assortment of America's most modern screw, sample Type "A" Bit, and illustrated Brochure.

IS IT LOW TOOL COST?
This rugged Type "A" Bit may be repeatedly restored to its original efficiency by a 60-second application of the end surface to a grinding wheel. No delay. No expense.

CLUTCH HEAD · SCREWS ·

IS IT SIMPLE FIELD SERVICE?
. . . CLUTCH HEAD is the only modern screw basically designed for operation with a common screwdriver, which need only be reasonably accurate in width.

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

writer quite agrees with the reasoning which was advanced in such discussions.

Austempering is a term which is universally agreed upon as a definition for the process whereby steel parts are quenched from the austenitizing temperature to a temperature well above the M_s point and held at such temperature for a length of time sufficient to effect a complete isothermal transformation prior to cooling to room temperature. The resulting structure is, of course, bainite. From the term austempering one might logically conclude that martempering would consist of a process involving an isothermal transformation to martensite. Since such a process has now come into some use it seems only logical that an isothermal transformation at or slightly below the M_s temperature should be termed as martempering while a similar process involving only an interruption in the quench and no isothermal transformation should be referred to by the more logical term marquenching.

The writer cannot agree with Mr. Shepherd in the following statement made in his letter: "holding time required to complete transformation at or slightly below the M_s temperature would be so long as to be definitely uncommercial." The TTT curve for 521000 steel (Atlas of Isothermal Transformation Diagrams by U. S. Steel Corp.) austenitized at 1550° F shows that transformation at the M_s temperature is completed in approximately 1 hr. This is quite well borne out by the results of hardness and impact tests as well as the photomicrograph (fig. 8) in the article by the writer. Fig. 6 of a paper, "The Interrupted Quench and its Practical Aspects," presented by the author at the twenty-eighth Metal Congress also shows effects of holding time in the quenching medium.

It does not seem to the writer that a holding time of 1 hr is an impractical length of time to use in practice, in order to obtain certain definite properties. As to Mr. Shepherd's theory that a mistake was made in the M_s temperature determination this seems hardly likely. Determinations made by two different methods proved the M_s temperature for the steel in the condition studied to be between 475° and 485°F, therefore the transformation product in this temperature ranges would be martensite and not bainite. There is probably no doubt that in the practical use of such a process there would be some lower bainite formed, but even so, it appears to the writer that such a method could not be termed as austempering. The physical properties obtained by isothermal transformation near or slightly below the M_s temperature are somewhat similar to those obtained

but quenching to room temperature and subsequently tempering at the same temperature employed for the isothermal treatment. Some increase in toughness at the same hardness is obtained in the isothermal treatment, by the main advantage is the minimized deformation as compared to quenching to room temperature and subsequently tempering. The writer believes that as the interrupted quench and its various modifications come into wider use that a definite distinction must be made by the use of three terms instead of only two.

HOWARD E. BOYER
Chief Metallurgist
American Bosch Corp.
Springfield, Mass.

HIGH TEMPERATURE ALLOYS

Sir:

We would appreciate receiving tear sheets of the article, "Characteristics of Three High Temperature Alloys," by J. B. Henry, Jr., which appeared in the June 12 issue.

C. A. KLEIN
Metallurgist
Crucible Steel Co. of America
Syracuse

WRONG AUTHORS

Sir:

Your June 26 issue carried an article entitled "Production Control at Caterpillar" and erroneously showed the author as myself. This article had as its authors, J. A. Wall and D. K. Elliot. Both of these men are in our production department. All credit for the fine article on our "Production Control" department should go to them.

W. G. THANNERT
Supt. of Layout and Timestudy
Caterpillar Tractor Co.
Peoria, Ill.

● Thanks, Mr. Thannert, for putting the record straight. The error was inexcusable. Our sincere apologies go to the authors Wall & Elliot. (Mr. Thannert, incidentally, was the author of the very practical sequel to the Wall-Elliot article which appeared in the July 10 issue.)—Ed.

FLAKING

Sir:

Would you please send me tear sheets of the article, "Flaking in Alloy Steels" by S. W. Poole of the Republic Steel Corp., published in the July 17 issue.

A. L. RUSTAY
Chief Metallurgist
Wyman-Gordon Co.
Worcester

WELDING SOCIETY MEETING

Sir:

Could you tell us where and when the convention of the American Welding Society is being held? We are of the opinion that this convention is usually held in conjunction with the National Metal Exposition which is scheduled for Chicago in October . . .

KEEP ARCOS IN MIND

FOR WELDING AND CUTTING STAINLESS, ALLOY, AND NON-FERROUS METALS

ARCOS electrodes and bare wire for the fabrication of stainless steels, and the Arcos Oxyarc Process for cutting stainless and other metals are a combination that will lower costs, increase production, and satisfy customers.

The ARCOS Demonstration Booth at the National Metal Show in Chicago October 18-27 is No. 1730

ARCOS

ARCOS CORPORATION • 306 GULF BUILDING, PHILA. 2, PA.

STAINLESS AND ALLOY WELDING ELECTRODES

and OXYARC PROCESS FOR CUTTING METALS

Is it necessary to register for this convention in advance and where?

WINSTON G. GORDON
Manager
Steel Fabricating & Welding Ltd.
Dundas, Canada

● The American Welding Society convention will be held at the Hotel Sherman in Chicago, Oct. 19-24, concurrently with the National Metal Show. An application on which you can apply in advance for hotel reservations through the society is being sent to you.—Ed.

AUTOMATIC SONIGAGE

Sir:

We read with a great deal of interest the Newsfront item in the July 10 issue, which mentions the new automatic Sonigage. We would like to know more about this device and would appreciate your advising us the manufacturer.

E. NANCE
Engineering Dept.
Vendo Co.
Kansas City

● Description of this ultrasonic testing instrument is given in an article by W. S. Erwin and G. M. Rassweiler of the Research Laboratories Div., General Motors Corp., in the July 24 issue, p. 48, for names of manufacturers of the instrument, see the issue of Aug. 14, pp. 124 and 133.—Ed.

RECENT DEVELOPMENT

Sir:

On the Newsfront page of the May 22 issue, you tell of a new wrinkle in brazing carbide tool tips with a silver alloy paste that melts at 480°F. We are interested in this new development and would appreciate any information you can give us regarding the manufacturer.

N. W. WEBB
Vice President
Eastwood-Nealley Corp.
Belleville, N. J.

● Sherman & Co., 197 Canal St., New York, manufacture the paste.—Ed.

ISOTHERMAL TREATMENTS

Sir:

We would appreciate reprints of the following articles appearing in the Apr. 17 issue: "Modified Isothermal Treatments Minimize Distortion" by O. E. Brown, and "Causes and Prevention of Welding Defects" by Frederick S. Dever.

A. H. MAGGS
Engineer
Watervliet Arsenal
Watervliet, N. Y.

EXPANSION REAMERS

Sir:

We are interested in the import of expanding reamers and request a list of manufacturers of these reamers.

H. V. INTERMETAAL
Rotterdam

● A list of some of the larger companies who manufacture expansion reamers is being sent.—Ed.